ABSTRACT

Burnout Across a Female Physician's Career: Manifestations of Burnout, Appraisal of Current Interventions, and Future Directions

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Women in medicine hold a unique role both in their professions and society at large. Recently, there have been great strides in the representation of women in the medical profession. However, regardless of the rise in women entering the field, the socio-cultural phenomenon of burnout unfortunately disproportionately impacts these female physicians. In order to retain female physicians in the workforce and thus guarantee a bright future for the medical profession, it is essential to explore how burnout manifests across a female physician's career, as well as the nature of interventions that address this burnout. As compared to their male colleagues, female physicians are more vulnerable to certain factors which perpetuate burnout, such as lack of leadership opportunities, administrative burden, challenges with work-life integration, and loss of autonomy. This thesis will depict burnout as a cumulative process, manifesting in different ways throughout the stages of a female physician's career, from undergraduate education to their experience in the workforce. Furthermore, this thesis depicts interventions which address burnout at these stages, paired with a thoughtful appraisal of these interventions in an effort to identify strengths, as well as gaps where future research and implementation is necessary.

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BURNOUT ACROSS A FEMALE PHYSICIAN'S CAREER: MANIFESTATIONS OF BURNOUT, APPRAISAL OF CURRENT INTERVENTIONS, AND FUTURE DIRECTIONS

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TABLE OF CONTENTS

Chapter One: Burnout in the Labor Force, Professionals, and Physicians . 1

Chapter Two: Contributors to Burnout Across a Female Physician's Career . 18

Chapter Three: Interventions to Address Burnout Across a Female Physician's Career 36

Chapter Four: Appraisal of Interventions and Future Directions to Address Female Physician Burnout 46

Bibliography 59

CHAPTER ONE

Burnout in the Labor Force, Professionals, and Physicians

Introduction

More than a third of the physician workforce consists of women. Furthermore, since 2019, the majority of medical students have been women (AMA 2020). This thesis will examine physician burnout in these women, by providing an overview of unique contributors to burnout that face female physicians, as well as an analysis of the strengths and weaknesses of existing interventions that aim to reduce this burnout. The goal of this work is to illuminate the challenges faced by female physicians and urge for the implementation of effective interventions that uplift female physicians and eradicate the burnout that is currently afflicting women across the profession. Given the rise of women in the physician workforce, which is predicted to only increase in the future, it is incredibly important to give careful consideration of this topic and analyze why interventions have not been successful. Does this reflect a need for advocacy and increased awareness? Or perhaps it is a much deeper systemic issue, intertwined with the way our healthcare system functions, and the role of women within this macro-system. This thesis will seek to explore these important considerations, as well as highlight that the way we consider and intervene to address burnout in female physicians is an issue of equity. It will also seek to show that it is undoubtedly a worthwhile and significant investment to ensure that female physicians thrive within the healthcare system.

Chapter One will provide a background regarding burnout across the labor force, different professions, and in the profession of medicine at large. It will conclude with a consideration of the role of gender in burnout. This general consideration of burnout will lay the groundwork for a fruitful discussion of burnout in female physicians in Chapter Two, explored in a sequential fashion, through a consideration of factors which exacerbate burnout at various stages of a female physician's lengthy career—from undergraduate education to full-fledged medical practice. This will be followed by a discussion of various interventions and their associated strengths and weaknesses in Chapter Three, which will illustrate interventions which seek to address burnout in each career stage. These interventions will be illustrated in a concept map, which can hopefully be utilized in shaping future interventions to increase efficacy and positive impact. This thesis will conclude with Chapter Four, which will present a thoughtful consideration of the strengths and weaknesses of the interventions, as well as potential solutions and future directions for ameliorating burnout in female physicians. This thesis will thus specifically address a gap in the literature by looking at burnout interventions aimed at reducing burnout in female physicians and exploring different aspects of these interventions to determine what has been effective in reducing burnout, as well as aspects of interventions that may have not been as fruitful in this pursuit. The consideration of this important topic is particularly relevant in the wake of the COVID-19 pandemic, which exacerbated already existing inequities for female physicians (Jones et al. 2020). This thesis will seek to underscore the need to empower female physicians, for the sake of the future of our healthcare system, the health and wellbeing of women in medicine,

and the health outcomes of the patients that they serve. We will overall have a healthier, more vibrant society if efforts are made to eradicate female physician burnout.

Burnout Definition

Burnout is a multifaceted concept, with significant consequences at the individual, organizational, and societal level. Attaining a singular definition of burnout is a difficult pursuit given its inherently multidimensional nature (Manzano-García et al. 2013). Burnout can be described as psychological erosion, or chronic exposure to stressors. The term first emerged in the context of occupations which emphasize relationships. Whether that be relationships between patients and physicians, or more generally between providers and recipients, burnout is distinctly interpersonal. Furthermore, these relationships are in the setting of organizational environments, which are shaped by social, political, and economic factors (Rossi et al. 2006).

A multidimensional model of burnout describes 3 key dimensions of the burnout phenomenon as "overwhelming exhaustion, feelings of cynicism and detachment from the job, and a sense of ineffectiveness and lack of accomplishment" (Maslach 2003). Maslach has conducted pioneering work in the field of burnout, including the development of the Maslach Burnout Inventory (MBI), a measure to assess burnout which considers these three components. In the context of this three-pronged model, burnout can be considered a sustained response to chronic emotional and interpersonal stressors. The dimension of emotional exhaustion entails emotional overextension and depletion of emotional resources, which results in a paucity of energy left to help those in need. Furthermore, the dimension of depersonalization involves a sense of detachment, loss of idealism, and eventual dehumanization. Lastly, a reduction in personal

accomplishment creates a low level of self-efficacy, which can be further compounded by insufficient social support and professional development opportunities. Burnout involves a consistent theme of chronic demands or stressors in the workplace that often perpetuate conflict between role demands and values (Maslach et al. 1998). Recent research has adopted the usage of the term *engagement*, which is the opposite of burnout. Engagement entails the positive spectrum of the same three dimensions of burnout: high energy levels, strong involvement, and increased efficacy. Thus, there is a spectrum individuals may face in the workplace, ranging from burned out to engaged (Maslach et al. 1998).

It is notable that many job stressors that perpetuate burnout are rooted in organizational factors that establish norms in the work environment. Burnout is evidently highly influenced by situational contexts, even if it appears to manifest at the individual level (Maslach et al. 1998). Effective interventions aimed to combat burnout should thus be cognizant of the high influence of external factors on all aspects of burnout.

Brief History of Burnout Research

Since its conception, burnout has consistently been embedded in social circumstances. The study of burnout has been the focus of much research in the 20th and 21st centuries. The conception of the term arose in the 1970s, coined by the psychologist Herbert Freydenberger. He utilized the term burnout to encapsulate the repercussions of severe stress, particularly for individuals involved in "helping professions", which include individuals like doctors and nurses who practice a degree of sacrificing themselves in the pursuit of caring for others (Institute for Quality and Efficiency in Health Care 2020). Furthermore, for a historical context, in the 1960s, the social welfare legislation associated with the War on Poverty in the United States prompted a surge of

idealistic, young individuals entering human service jobs. However, these idealistic intentions were met with disillusionment, and a subsequent disintegration of their initial idealism. This loss of an idealistic image of their careers prompted a state of cynicism and despair, which began to characterize the experience of burnout. Furthermore, since World War II, traditional communities embedded in society, such as the neighborhood and the family, have gradually eroded. This has occurred concurrently with the rise of a new culture dominating modern society, which champions individualization, but at the cost of social fragmentation (Schaufeli 2017). This depiction of the historical foundation of burnout reinforces the idea that burnout is socially influenced and can even be considered "a culture-specific notion", and "in addition to a subjective experience… a multi-faceted socio-cultural phenomenon" (Schaufeli 2017). The issue of workplace conflict adds another dimension to the historical emergence of burnout. In the context of modern society and the rise of capitalism, the oversight of bureaucratic administration has skyrocketed in all realms, resulting in conflicts between the work of professionals, and the bureaucratic practices imposed by the administration of institutions. There is thus an increasing rift growing between the professional and the institution of which they are supposed to be a key part (Walker 1986). This type of workplace conflict, which can be seen as concomitant to our modern society, further exacerbates the issue of burnout.

Burnout is prevalent across various levels of the workforce and can be observed with diverse manifestations among the labor force, professionals, and physicians. These manifestations and appropriate interventions to address them can diverge further by gender, as this thesis will elucidate in its consideration of burnout amongst the distinct subgroup of female physicians. Understanding how burnout manifests in distinct

populations is key to developing effective interventions that will diminish burnout and revitalize our workforce. In a capitalistic society which places value on working and occupational attainment, it is evidently all the more relevant to study burnout and its implications.

Burnout in the Labor Force

Burnout differs significantly amongst different occupational groups in the larger workforce. A notable study on burnout differences between different socio-occupational groups depicts diverse manifestations of burnout symptoms. The study found a lower degree of burnout amongst occupations like production workers and salespeople, where chronic occupational stress is not common. Furthermore, the experience of burnout differed across time for different occupations. For entrepreneurs, for instance, burnout is observed primarily in the initial phase of work life and is otherwise largely absent. For occupations like psychologists, the burnout dimension of emotional exhaustion is more evident (Bocheliuk et al. 2020). Though the findings in such a study are quite useful in presenting a trans-occupational picture of burnout, there can be diverse experiences amongst individuals in the same occupation, which could vary based on the characteristics of specific organizations. Regardless, overall it is evident that the manifestation of burnout "differs quantitatively and qualitatively in various professional environments, depending on the age, nature of activity and frequency of professional stress, degree of personal responsibility, [and] emotional involvement in the work" (Bocheliuk et al. 2020). This finding is important, as it implies a need to develop distinct interventions that are suited to different occupations.

Furthermore, regarding the general discussion of burnout in the labor force, there is ample discourse on individual versus organizational and societal determinants of burnout, and whether personal faculty or workplace oversight take precedence in shaping the manifestation of burnout. Research supports that across occupations, factors like job control are linked to burnout. This finding underscores that burnout is shaped by more than subjective, individual factors, and can be shaped by changes in the larger work environment. In the case of control, this can equate to implementing interventions that provide individuals with more opportunities to influence their work situation (Taris et al. 2005). Furthermore, in an analysis of contributors to burnout in the workforce, researchers have found that factors such as lack of social support in the workplace and paucity of involvement in key decision making can also affect burnout in significant ways. Participation has a negative relationship with burnout. When individuals do not have a way to participate in their workplace or play a role in decision making, they suffer from increased levels of depersonalization. Lack of supervisory support is also a notable factor that contributes to burnout, further emphasizing the precedence of organizational factors in shaping individual manifestations of burnout in the workforce (Posig et al. 2003). Despite these notable findings, the work of Maslach shows that the majority of discourse regarding burnout interventions focuses on individual approaches, such as interventions to change individual behavior or bolster personal resources. This focus in interventions is contrary to the finding that individual factors play a comparatively lesser role in determining burnout as compared to organizational factors. Thus, in burnout research there is a disconnect between theoretical findings, and the interventions that are implemented in practice. Maslach shows that interventions that solely seek to affect

individual level factors do not impact all dimensions of burnout, and thus cannot address the issue effectively. It is necessary to re-evaluate interventions, especially in the context of professional workplaces, which are often multifaceted, complex, and influenced by a plethora of external factors which impact an individual's experience of burnout.

Burnout in Professionals

Going beyond the workforce in general, burnout has distinct manifestations in professionals, specifically in a subset of professions coined the "helping professions". This group of professionals includes "health professionals, psychologists, educators, social workers, lawyers and police officers, firefighters, rescue services, divers" and generally all individuals who possess good will and provide aid in crisis situations as a central facet of their profession (Papovic et al. 2009). The work of these individuals can be further considered as "emotional labor", which is a term that broadly describes the phenomenon where professionals must suppress their emotions in exchange for wages (Jeung et al. 2018). For such professionals, Maslach notes that burnout occurs in conjunction with this distinct need for emotional labor, when individuals must constantly engage in emotionally charged interpersonal interactions with those that they serve. Reports of burnout among helping professionals are highly associated with "low morale, absenteeism, and high job turnover" (Maslach 1978). Furthermore, this burnout can be severe enough to prompt individuals to leave their professions entirely.

Burnout among professionals is often associated with the emotional state of empathy, arising in consistent interactions where one must witness and engage in the suffering of others. This emotional labor is often compounded by a gap between idealistic expectations for a profession, whether that be serving patients, defending clients, or

protecting community members, and the real possibilities of helping. There are limited resources present in organizational structures, and both the helping professionals and those that they serve are embedded in existing structures of power which may constrain individual faculty and result in expectations not being met (Papovic et al. 2009). It is evident from the research that human service professionals are aware of how to best address problems with their clients or patients, and are cognizant of the best actions to take to ensure the highest possible outcomes. However, they face significant challenges pertaining to the context in which they work. Thus, workplace and organizational factors are a limiting factor, which alludes to previous discussion regarding individual versus organizational determinants of burnout. Research supports that interventions which increase workplace autonomy and provide professionals with opportunities to use their skills while concurrently developing competence would be positive steps towards reducing burnout. Furthermore, these positive effects go beyond the professional, and changes in the organizational environment that bolster professional autonomy translate to more effective service, which positively impacts clients (Leiter 1991).

Furthermore, inherent power structures are prevalent in professional work environments, and clashing values between professionals and bureaucracy can further compound burnout. The issue of professional autonomy is central, and there are conflicting priorities as bureaucracies give “precedence to the exercise of authority by virtue of hierarchical position [while] professionalism gives precedence to the exercise of authority by virtue of expertise” (Leiter 1991). Bureaucratic structures can also limit professional autonomy by practicing unilateral decision making, which does not engage professionals. This is contrary to the fact that very few decisions in any service agency

have purely administrative repercussions, as there are always implications for professionals and the service provision. Additionally, performance appraisals in the professional workplace continue to assess the individual, rather than the department or clinic as a whole. This undermines the importance of multidisciplinary cooperation in the workplace, and thereby further increases the divide between the intentions of administrative oversight and the realities experienced by professionals in the workplace. This divide can serve to perpetuate burnout through power structures that are not necessarily supporting the needs of professionals or those that they serve (Leiter 1991).

Examples of Burnout Manifestation in Specific Professions

Depictions of how burnout manifests in specific professions can help illuminate the causes and implications of burnout, as well as underscore the specificity of its nature in different professions. Clergy, for instance, are considered a helping profession with a diverse job description that includes leadership and consistent engagement with the individuals they serve. Furthermore, the work of clergy can be very emotional, involving direct emotional engagement with members of a congregation and providing services like grief counseling. The issue of burnout in clergy can have negative effects not only on these professionals, but also on their congregations and wider communities (Adams et al. 2017). In a comparison of clergy with other professionals, researchers found that clergy burnout appears to be worse than that of counselors, but better than that of police officers and emergency personnel. There are strategies and intervention possibilities that can be discovered through such a comparison. For instance, clergy may benefit from on-call support and backup that counselors utilize. It is evident that there is notable variation in burnout manifestation between and within professions that is important to consider

(Adams et al. 2017). Another relevant example can be found in the profession of law. Lawyers are said to experience a phenomenon known as "vicarious trauma" which can arise in daily work with clients who have been traumatized (Silver et al. 2004). Empathetic engagement with these clients can increase the risk of burnout in lawyers. Furthermore, there are administrative issues involved with the practice of law that further compound the likelihood of burnout. In the case of referring clients who suffer from trauma to mental health professionals, lawyers are often hesitant to engage in this positive practice. However, without referrals, the lawyer is often in a position where they play the dual role of a therapist to their client, as a natural consequence of the sizable emotional trauma the client has faced, embedded within the case. Experts in the profession believe that this is attributed to a "general discomfort or lack of experience of the legal profession in reference to dealing with this side of what the clients bring" (Silver et al. 2004). Lawyers are not adequately prepared to deal with these issues, yet by nature of the profession they increasingly having to, a phenomenon which is subsequently increasing burnout. Institutional or organizational level change is one way of approaching this issue in law, and can also be fruitful in other professions, such as the practice of medicine.

Burnout in Physicians

Among the helping professions and compared to all U.S. workers, physicians have an alarming risk of burnout. Research shows that physicians work more hours and struggle more with work-life integration than other U.S. workers, even after adjusting for hours worked. Higher levels of education and advanced degrees reduce burnout risk for fields outside medicine, whereas having an MD or DO degree increases the risk of burnout. Burnout amongst physicians merits special consideration, as it does not simply

follow societal trends of burnout, but instead reflects a much deeper, systemic issue that is threatening our healthcare system as a whole (Shanafelt et al. 2012).

There are a variety of significant risk factors that may lead to burnout in physicians. The American Medical Association (AMA) presents 12 key factors that heighten burnout, derived from a report by the National Academy of Medicine. These factors range from lack of effective legislation and issues in the healthcare system at large, to the intricacies of prescription drug monitoring programs and medical record documentation (AMA 2020). It is commendable that major healthcare organizations like the AMA are recognizing that burnout is fueled by a multitude of systemic level factors. However, as burnout persists, there is still much work to be done in order to apply this knowledge towards tangible positive change. A notable review which culminates the factors related to physician burnout found overarching factors affecting burnout to be primarily related to work related factors and personal characteristics. Work factors may include specialty choice, administrative burden, loss of autonomy, and lack of support. Like many reviews and original studies throughout the body of research on physician burnout, these researchers also emphasize personal characteristics, such as poor coping strategies and perfectionism, as key contributors to burnout. They thereby advocate for interventions like mindfulness and self-care as avenues to reduce burnout (Patel et al. 2018). Studies have also found that out of all the dimensions of burnout, the dimension of emotional exhaustion has the greatest effect on physicians, and physicians with higher levels of exhaustion are more likely to reduce their clinical schedules or leave their practice altogether (Carmen et al. 2019). There undoubtedly are important considerations at the individual level that affect burnout– how an individual copes with significant

emotional exhaustion is important. However, a significant root of this emotional exhaustion lies in the workplace, due to administrative burden, lack of support, and other aforementioned factors. It is important to consider that though the individual characteristics of a physician are relevant, they are perhaps currently being utilized as an avenue to instate interventions that avoid the implementation of much more difficult systemic level changes. In reality, as is corroborated by the range of factors contributing to burnout present in the literature, combinations of individual and systemic factors must be applied in the development and implementation of successful interventions to address physician burnout (Templeton et al. 2019).

Though the current research has brought about significant advancement in this field, the burnout rate among physicians is still high, which merits further research into the complexities of the healthcare system and why interventions are not achieving a significant effect. A Medscape survey of physicians has derived an overall physician burnout rate of 42%, which represents a decrease from the burnout rate of 46% from five years ago. Furthermore, according to the survey the key causes of burnout have not changed over the years, as 55% of respondents chose “too many bureaucratic tasks” as their perception of the leading cause of burnout. There are also variations in burnout within the profession of medicine, specifically amongst different specialties. The survey found the highest rates of burnout occurring in the specialties of urology, neurology, and nephrology (AMA 2020). Further research has also found differences in burnout on the basis of medical specialty, with high rates of burnout amongst residents and interns in surgical/urgency specialties, like general surgery, anesthesiology, obstetrics and gynecology, and orthopedics (Rodrigues et al. 2018). Such differences are also mediated

by factors like emotional exhaustion. Research has shown that physicians in outpatient specialties experience higher levels of emotional exhaustion as compared to inpatient specialties, and that this difference is especially pronounced when constraining organization structures are present. Furthermore, factors like increased autonomy can lower levels of emotional exhaustion in outpatient specialists, and thus reduce burnout (Lee et al. 2013). The unique characteristics that differentiate medical specialties as well as the presence of potentially constraining organizational factors can intersect to increase burnout in physicians. This knowledge can be helpful in crafting effective interventions that recognize the unique confluence of these factors for different specialties.

Negative Repercussions of Physician Burnout

There are numerous negative repercussions of burnout among physicians, which underscore the urgency of finding and implementing effective solutions to this issue. Research has shown that stress associated with the practice of medicine can lead to suicide, and that fear of losing licensure if one was to seek out help further increases burnout (Gold et al. 2013). This represents a form of administrative oversight that is negatively affecting burnout in physicians. In addition to losing valuable physicians to suicide as a consequence of burnout, there is also the significant consequence of reduced efficacy and quality of patient care. Research shows significant errors associated with burnout in resident physicians (West et al. 2009). These mistakes can have detrimental outcomes for patient care and increase cost to the healthcare system at large. Regarding productivity of physicians and its relationship to effectiveness of patient care, data out of Mayo Clinic published by the American Medical Association exhibits that "after a one-point rise in burnout or a one-point drop in professional satisfaction, there was a 30–50

percent greater chance that physicians would reduce their professional work effort" (AMA 2018). These tangible effects of burnout on individual physicians are significant and far-reaching and can result in net financial loss in healthcare due to physicians leaving the profession as a result of high rates of burnout. Especially for specialties at the front line of care access, like emergency medicine, general internal medicine, and family medicine, there is a very high risk of burnout (Shanafelt et al. 2012). Research supports this claim for primary care, as across different primary care subspecialities: "Turnover costs for all PCPs in the cohort by specialty were $24.5 million for general/family practice, $22.3 million for general internal medicine, and $22.2 million for pediatrics" (Buchbinder et al. 1999).

Burnout among physicians is a complex issue, notably due to the unique role that physicians play in the patient-physician encounter, as well as the interpersonal relationships physicians have within the workplace. In the modern healthcare system, physicians act as "double agents" who must balance competing interests for patients and the myriad of institutions and stakeholders that are involved in healthcare (Timmermans 2020). Further, there are unique social networks that exist in the residency stage of medical training where physicians can experience loneliness, which contributes significantly to burnout (Shapiro et al. 2015). Bolstering these social networks, along with increasing access to key resources like mentorship and mental health services can play a major role in decreasing burnout. In the absence of such services, which is unfortunately the norm in many modern healthcare institutions, depersonalization and emotional exhaustion are prevalent (Marchalik et al. 2019). It is evident from the literature as well that work environment characteristics and external factors within the

institution have a greater impact on physician burnout as compared to individual factors like resilience (Dillon et al. 2019). Despite the growing body of research supporting this claim, current interventions to reduce burnout in physicians only seek to affect the individual physician, thus undermining the higher potential for effective and sustainable impact associated with institution level interventions (Shanafelt et al 2017). Stanford and Mayo Clinic are two institutions that have implemented institutional level interventions to address physician burnout, which include pioneering initiatives such as the instatement of a Chief Wellness Officer. Their efforts have been effective in lowering the rate of burnout (Walker et al. 2018). Re-evaluating interventions is key to solving the issue of burnout. Given the rising complexity of the healthcare system, and the potential of effective interventions to positively impact both physicians and patients, increased investment across the nation is necessary in order to elucidate potential interventions and create sustainable change.

Introducing The Role of Gender in Physician Burnout

The extensive literature regarding burnout begets the question of the role of gender amidst this complexity. As subsequent chapters will illustrate, the role of gender in physician burnout is multifaceted, and it is incredibly important to understand salient differences in the manifestation of burnout between male and female physicians. Regarding the differential prevalence of burnout amongst the genders, there are definite contributors to burnout which have a greater impact on women as compared to men, as will be explored in Chapter Two of this thesis. However, when considering overall prevalence of burnout, it is difficult to determine whether one sex is differentially affected, at least in light of the current body of literature. However, what is clear is that

gender causes differential experiences with burnout, as female physicians navigate healthcare in a manner that is distinct to men. There are differences in the risk factors they face, and subsequent differences in the intervention initiatives that would best address burnout (Templeton et al. 2019). Though it may not be entirely clear whether female physicians are definitively more burnt out, it is clear that their differential experience with burnout requires specialized interventions, and further research is necessary to determine not only which interventions would be most efficacious, but where and when these interventions should take place in order to have the most positive impact.

Conclusion

Overall, this introductory chapter sought to lay critical groundwork for future discussion of female physician burnout, through illustrating what burnout is, establishing its key dimensions and mode of measurement, as well presenting a historical background of burnout research to show how it is pervasive in our modern society and culture at large. Furthermore, this chapter discusses burnout in the labor force, professionals, and in physicians, depicting how physicians have a particularly high rate of burnout that necessitates special consideration, given its effect on our healthcare system and patient outcomes. This discourse will allow for a fruitful discussion in Chapter Two regarding female physicians, who generally have a higher likelihood of experiencing certain facets of burnout as compared with male doctors, such as the emotional exhaustion dimension of burnout (Hoff et al. 2021). Despite these findings, there have been a paucity of effective interventions aimed at reducing female physician burnout.

CHAPTER TWO

Contributors to Burnout Across a Female Physician's Career

Introduction

The COVID-19 pandemic was revelatory in depicting the urgent need for change in various facets of our healthcare system, including the state of diversity in the workforce. The status of women in medicine has become all the more important to consider in the aftermath of the pandemic, as the circumstances of the pandemic elucidated the need to uplift female physicians and promote retention and ascension to positions of leadership within medical institutions. It is evident that the pandemic exacerbated already existing inequities for female physicians by increasing work-life conflict, increasing the already existent leadership gap, and impacting just compensation. Furthermore, the pandemic negatively affected both physical and mental health of female physicians (Jones et al. 2020). Though the potentially dire consequences of these impacts have not fully manifested yet, the urgency of addressing the issue of the status of female physicians in our healthcare system is evident.

A recent report published by the National Academies of Science, Engineering, and Medicine corroborates the barriers impacting female physicians that the pandemic brought to light. The report introduces important nuances regarding the advancement of female physicians. Though the number of women earning medical degrees has increased, women, and in particular women of color, are underrepresented in medicine relative to the U.S. workforce. Furthermore, there is significant underrepresentation of women at

higher levels of leadership, as women account for only 18% of hospital CEOs and 16% of deans and department chairs (National Academies Report 2021). A study examining AAMC data on medical school graduates over a 35-year period found that in academic medical centers, women are less likely to be promoted to full professor or appointed to department chair as compared to men, and that this trend did not diminish over time (Richter et al. 2020). As for the causes of these disparities and the lack of equitable representation in leadership, the National Academies reports “structural inequities, bias, discrimination, and harassment” facing women in medicine, issues that necessitate systemic solutions and interventions to address deeply embedded barriers that are preventing women from thriving in their medical careers (National Academies Report 2021).

It is well known that there are many women in the pipeline to become physicians, women who matriculate into medical school and earn their M.D. degrees. Association of American Medical Colleges (AAMC) data shows that from the most recent application cycle where data is available, women comprised 53.7% of matriculants to MD-granting medical schools. However, despite this trend, which has been consistent in the past decade, women still lag behind men in attaining positions of leadership (AMA 2021). Furthermore, beyond attainment of leadership roles, there is an even more significant issue of retention of female physicians in the profession. Though there may be many women in the pipeline who add to the diversity of medical school matriculants, it is a significant loss to the medical workforce and society at large if these female physicians do not remain in the profession later on in their careers. Unfortunately, the phenomenon of losing bright and capable female physicians is rampant. Research supports that around

40% of female physicians transfer to part-time work or completely leave the practice of medicine within 6 years of completing residency (AAMC 2019). Furthermore, within those 6 years of completing training, "22.6% of women physicians were not working full-time compared to 3.6% of male physicians", a gap which expands even further for women with children (Frank et al. 2019). This phenomenon underscores the urgent need for institutions to better support female physicians. Additionally, there is a significant economic impact associated with burnout due to the disparities that exist between male and female physicians. This can be quantified as 1.1 M RVU loss for females vs. a 488 K loss for males. Thus, dedicating resources to lessening disparities will be beneficial to the healthcare system (Turner et al. 2017). The future of our medical workforce depends on the retention of female physicians, which can only be achieved through interventions that provide them with support and opportunities for advancement.

As established in the previous chapter, burnout disproportionately impacts female physicians, regardless of specialty (Hoff et al. 2021). Medicine is losing excellent talent amongst female physicians, and this is frankly a loss we cannot afford to have. This chapter will seek to illustrate the reasons for this loss, by establishing the historical context within which female physicians have worked, with a consideration of the distinct barriers they have faced in the profession. Furthermore, this chapter will also delve into the distinct contributors to burnout in women, and how these contributors manifest at different stages of a woman's medical career. This consideration should lay sufficient groundwork for a thoughtful examination of interventions in subsequent chapters that both consider facets that contribute to burnout and potential points of intervention in the span of a female physician's medical career.

Contributors to Burnout

The contributors to burnout are distinct for female physicians, rooted in the history of women in the profession. Women were not always the dominant matriculants into medical schools. In fact, early female physicians had to fight for a place in the profession, and their efforts laid the foundation for the advancement we have seen thus far. In the United States, Dr. Elizabeth Blackwell was the first woman to be granted an MD degree (AAMC 2020). She applied to 29 medical schools across the country and was rejected from all of them on the basis of her gender. Eventually, Dr. Blackwell was able to gain admission to Geneva Medical College in New York, where she graduated in 1849 and ranked first in her class. Many pioneering female physicians had to focus their efforts on convincing others that there were no biological or intellectual barriers that would prevent them from being effective physicians. For instance, one such pioneer, Mary Putnam Jacobi, conducted clinical research to prove that biological functions like childbearing and menstruation do not disqualify women from entering male dominated professions (More 2009). Though there has been significant progress since these pioneers established a place for women in the field of medicine, the culture of medicine today is arguably still not conducive to the advancement of female physicians. More than 150 years after Dr. Blackwell's efforts to allow women to enter the medical field, in modern times there has been a sizable influx of female physicians into the profession. However, rooted in this history that is deeply embedded into the institution of medicine, female physicians still face significant challenges today that deter equitable advancement in the profession.

Challenges Faced by Female Physicians Today

Burnout in general is “a multi-faceted socio-cultural phenomenon” (Schaufeli 2017). This blanket statement is even more true for female physicians, whose role in society intersects powerfully with their careers in medicine. Some issues that existed during the time of Elizabeth Blackwell still persist today. Female physicians have significant challenges in entering residency, achieving leadership positions that allow them to have a role in decision making, and attaining promotions (Joseph et al. 2021). The contributors of burnout are critical to consider in order to lay the groundwork for fruitful interventions. As discussed in Chapter 1, burnout contributors for both men and women encompass work related factors like specialty choice, administrative burden, loss of autonomy, and lack of support (Patel et al. 2018). There are certain overarching contributors to burnout that affect women in particular or to a higher degree, which include gender biases, salary inequity, professional isolation, and harassment/discrimination. All of these factors are unique to the experience of a female physician and contribute to higher rates of burnout (Joseph et al. 2021). Addressing Gender based discrimination and bias (GBDB) is necessary to maintain a diverse workforce. Research has found that GBDB affects 4 in 5 female trainees. This statistic is troubling and underscores the need for reform that reduces negative workplace behaviors and subsequently diminishes burnout (Wang et al. 2020). Further contributors that differentially affect women are work life integration, autonomy, workload, and stereotype perception (Templeton et al. 2019). Workload may include factors like EHR use. The introduction of EHR has resulted in investment of time beyond scheduled work hours for physicians. Female physicians spend more time in EHR overall, which creates a greater

susceptibility to burnout (McPeek-Hinz et al. 2021). It is notable that women in medicine experience distinct conflicts between their biological and professional clocks that are not faced by men, with female physicians reporting challenges related to timing childbearing with their careers and challenges with obtaining childcare, particularly during residency (National Academies Report 2021).

It is evident that the history of women in the medical field and the unique expectations of women in society exacerbate burnout in female physicians in a way that does not occur with male physicians. Understanding these differences can help elucidate effective interventions that would promote just advancement of women in the field of medicine.

Burnout Across a Female Physician's Career

Examining how these factors manifest at different points of a female physician's career is essential in the pursuit of holistic change. An examination of burnout in undergraduate education, medical school, training, and in different hospitals, specialties, and practice environments allows for a powerful depiction of how burnout culminates at every stage of a female physician's career. The recent trend of a larger proportion of women matriculating into medical school as compared to men is definitively a commendable achievement which supports a vision for a more equitable medical workforce (AMA 2021). However, there are factors and nuances beyond the numbers that play a role in sustaining progress and ensuring equity for female physicians throughout their careers.

Burnout in Female Undergraduate Students

When considering undergraduate pre-medical women, findings regarding degree of burnout and predictors of burnout in this stage of a woman's medical career are fascinating. In a study of undergraduate women interested in pursuing a pre-medical path at a mid-sized public university, it was found that in engaging women in a career as a physician, exposure to successful role models was key in shaping identity compatibility and sense of belonging in the profession. This positive process beginning with role modeling helps increase and sustain interest in pursuing medicine and can play a role in offsetting gender related barriers (Rosenthal et al. 2013). Thus, exposure to role models can be a buffering influence in the face of existent limiting gender norms that may hinder women in their pursuit of the profession. Beyond matriculation into medical school, this is important to consider at the undergraduate level in order to uplift and retain the promising young women we are losing who may not even attempt to matriculate into medical school.

Furthermore, research has found that premedical women have significantly higher levels of depression and burnout as compared to premedical men. In a consideration of the association between mental health and medical career interest, it was also found that premedical women experience a differentially greater decline in interest in pursuing a career in medicine (Grace 2018). These findings are of great concern and underscore the impetus to consider the incidence of burnout and diminished interest in pursuing medicine for women at the undergraduate level.

Additionally, gender biases exist at the undergraduate level with regard to attrition in premedical courses, as well as the MCAT. Significant gender biases in attrition were notably found in high-performing premedical women and were mediated by competency

beliefs. This finding destabilizes prior research that presented gendered attrition as a function of relative success in non-STEM pursuits, and relative weakness in STEM pursuits. Instead, it underscores the importance of motivation in female premedical students. It also alludes to the presence of stereotype threats, which are more prevalent in science courses and may result in these women making the wrongful attribution of the high level of effort required to achieve high grades in challenging courses to a lack of ability (Witherspoon et al. 2019).

Recognizing these perceptions in undergraduate female pre-medical students is critical to begin addressing precursors and the tangible presence of burnout at this early stage of a women's medical career. There is rich potential at the undergraduate level in the powerful socializing sphere of universities across the nation to address the cumulative effect of burnout in female physicians.

Burnout in Female Medical Students

Following an aspiring female physician's undergraduate career and distinct experience within the context of premedical studies, aspects of medical education can introduce factors that may magnify burnout, adding to the culmination of burnout already experienced during premedical studies. Targeting burnout at this stage is critical, and there are findings present in the literature to suggest that women again have a differential experience with burnout as compared to men in medical school.

In a study of female medical students at a private medical institution, women reported a variety of subtle and overt gender related experiences that impacted their wellbeing and experience of burnout. It is notable that these occurrences include both

sizable actions, like sexual harassment and male instructor bias against female students, as well as subtle actions, like selective encouragement of male students, lack of eye contact with female students, and the primary use of male pronouns (Babaria et al. 2011). These troubling findings underscore, yet again, the multifaceted nature of equity, and the understanding that though female medical students comprise a majority in medical institutions across the nation, this numeric equity is not all encompassing, and evidently not sufficient to truly bolster women and ensure their wellbeing.

Women in this study further noted *repeated* exposure to triggering, gender-related insults. The cumulative nature of their experiences, which are often not recognized or reported due to their subtlety, is incredibly important to note. The study conveys that these cumulative effects, paired with institutional silence and lack of infrastructure to support female medical students and address gender issues, had critical consequences on these young women, leading to "fatigue, frustration, isolation and self-doubt in response to their daily gender-related experiences", and an impetus to "question whether they belonged within the medical profession" (Babaria et al. 2011).

Further research studying first year medical students has found that when tracking burnout across the academic year, female medical students are consistently more burned out than males at all time points (Jordan et al. 2020). Acknowledging the presence of this disparity and ascertaining how it arises is critical in the pursuit of positive change. In terms of other markers related to burnout, the study found that male medical students had higher levels of resiliency as compared to female medical students in the first year of medical school. Overall, female medical students experienced lower resiliency, higher burnout, and higher perceived stress (Jordan et al. 2020).

Another notable study corroborates these claims and emphasizes the distinct experience of female medical students. When considering the experience of male and female third year medical students, it was found that female medical students were more likely to have higher empathic concern, as well as higher reported personal distress, emotional exhaustion, and perceived stress as compared to male medical students (Worly et al. 2019). Furthermore, the perceptions of female medical students regarding their future careers, and specifically the compatibility of the pursuits of career-building, marriage, and childrearing in the course of their future careers as physicians is incredibly valuable. In a study of third- and fourth-year female medical students, most medical students did not expect their work and family life to be fully compatible (Kwon 2017). They also expressed concern regarding prospective difficulty with adhering to societal standards regarding when to get married and have children, given the rigorous nature of pursuing a medical career. The author notes that the choices and reflections made by women in this study "do not appear to simply reflect their preferences or gender role socialization, but rather demonstrate how their career decisions were shaped and constrained by the structure of medical careers and social norms" (Kwon 2017).

Social norms for women, and a medical education and overall profession structure that perpetuates these constraining norms, shapes decisions made by female students. These are decisions regarding their career, their family, their life– and it is thus critical to consider whether the current state of medical education is allowing women to make positive decisions that would maintain their wellbeing and desire to continue in the medical career, or whether the decisions they are forced to make are having a negative impact. Female medical students convey that they are "forced to make choices and

sacrifices in both their careers and their relationships that their male counterparts do not have to make" (Kwon 2017). There are gendered expectations embedded within organizations, and medical schools are no exception. However, work life integration, and autonomy, which encompass autonomy in decision making, are factors proven to lead to burnout in female physicians (Templeton et al. 2019). The presence of these challenges in medical school is a cause of much concern that necessitates institutional change to remediate.

There is an urgent need to recognize that the needs of male and female medical students are distinct, and that there is disparity that is afflicting female medical students. With knowledge of this disparity and the factors that contribute to it, medical education institutions can create programs and support avenues that effectively serve female medical students with the intentionality and commitment this issue deserves.

Burnout in Female Residents

Burnout in female physician residents is critical to consider, with ample evidence suggesting that women are differentially afflicted by burnout at this stage of their medical career. Residency is already an incredibly taxing time for physicians. Having just attained their MDs, young physicians are practicing in a fast paced and often stressful environment. Research shows that early career physicians in general have "the lowest satisfaction with overall career choice (being a physician), the highest frequency of work-home conflicts, and the highest rates of depersonalization" (Dyrbye et al. 2013). Furthermore, early career physicians have a greater likelihood of experiencing work-home conflict that they are unable to adequately resolve in a manner that fulfills both

work and home responsibilities. It is also notable that because early career physicians are younger, they may have young children which results in added responsibilities that contribute to these work-home conflicts (Dyrbye et al. 2013). Societal gender expectations dictate that the role of childbearing falls disproportionately on women, and thus it is likely that balancing family life, the demands of rearing young children, and the rigorous demands of working as a physician may be even more challenging for female physicians at the early stages of their careers. Gender disparities thus may significantly compound the negative health repercussions and heighten the experience of burnout experienced by women at this stage of medical training.

Research corroborates this claim, as it has been found that personal and work burnout scores are significantly higher for female residents (Thrush et al. 2019). This difference can be attributed to challenges with work-life balance, and how these two spheres may conflict for young female physicians, especially following the transition between medical training and residency. Further research has found that this trend progresses as female physicians advance in residency training. In a study of surgery residents, it was found that "more senior, female residents that were dissatisfied with being a surgeon were most likely to consider leaving medicine entirely" (Ellis et al. 2020). Furthermore, as has been aforementioned, more than a third of the physician workforce consists of women, and, since 2019, the majority of medical students have been women (AMA 2020). Thus, this troubling trend of losing female physicians at the stage of residency underscores that the issue of equity in the medical workforce is not one-dimensional. There is a significant need to focus on retaining female physicians in the workforce, in order to mitigate the dire consequences of losing promising young

women who may prematurely exit the medical workforce as the result of the burnout they experience. It is evident that the stressors which differentially affect women, which include social and family factors, may have cumulative effects over the course of residency, as was also seen at the stage of medical education. Understanding how these stressors manifest and perpetuate burnout is essential when considering how to increase retention and reduce attrition (Ellis et al. 2020).

In a consideration of the experiences of female residents in Emergency Medicine, for instance, the findings corroborate these general claims. Emergency medicine in particular is a field where residents generally have low rates of attrition, and in fact, one of the lowest rates of attrition overall in comparison to other fields of medicine. Unfortunately, despite this promising finding, within the attrition population of Emergency Medicine residents, female residents comprise a significantly higher proportion when compared to the proportion of female EM residents in the workforce at large. It is important to note that these female residents were significantly more likely as compared to male residents to leave the profession due to "health/family reasons" (Lu et al. 2019). This finding yet again underscores the distinct interplay between home life and work life for female physicians, and the challenges that lay in the path to achieving satisfactory work-life integration. Creating innovative solutions where these two equally important spheres would not be in conflict is critical to the retention of these physicians and thus the future of medical profession.

Burnout in Female Specialists

The distinct experience of female physicians at the specialty level is also important to consider. There is ample data regarding a breakdown of specialty choice on

the basis of gender, provided by the American Medical Association (AMA 2019). The AMA reports that women make up a larger proportion of residents in Obstetrics and Gynecology, Allergy and Immunology, Pediatrics, Medical Genetics and Genomics, Hospice and Palliative Medicine, and Dermatology. Men comprise the majority of physicians involved in surgical specialties, which include Orthopedic Surgery, Neurological Surgery, and Thoracic Surgery. Furthermore, it is notable that among the top specialties pursued by women, Dermatology is the only one which ranks in the top 10 highest paying specialties (AMA 2019). It is evident that male physicians are involved in different specialties than female physicians, specialties that often receive higher pay. Ascertaining the impetus for the different specialty choices made by male and female physicians is an important endeavor to determine barriers women may face at this stage of their medical careers which may be impeding equitable pay and career outcomes.

In the discourse regarding women involved in surgical specialties and the potential barriers in their pursuit of careers in surgery, research shows that there exists a "lack of appropriate role models for women medical students, potentially making it difficult for these female students to identify with a surgical role and thus develop interest in becoming surgeons" (Baxter et al. 1996). Lack of role models, which was also found to be present at the undergraduate level, can be a significant barrier and should be addressed within medical education institutions when students are in the formation stage regarding their specialty choices. It should also be addressed by the specialties themselves, with surgical specialties, for instance, establishing prominent female role models in the field, who would serve to inspire and bolster interest in prospective female surgical specialists. Furthermore, this study noted other reasons beyond lack of role models that may shape

specialty choice, including lifestyle conflicts, negative perceptions of the compatibility of surgery with family life, and a perception of gender discrimination in surgery (Baxter et al. 1996). Addressing these valid concerns and perceptions is critical to attracting and retaining female physicians in surgical specialties.

Furthermore, an interesting phenomenon noted in the literature regarding female surgeons who do pursue male dominated specialties like surgery encompasses the complex interplay between gender roles and medical specialization. It is notable that women who possess experiences of being denied opportunities on the basis of gender are more likely to enter surgery. Furthermore, research shows that "Female surgeons possess an increased awareness of gendered barriers in medicine" (Davis et al. 2013). The literature describes female surgeons, and female physicians in general as a distinct group of gendered actors, who perhaps represent outliers when considering normal gender roles (Deutsch 2007). This role as outliers signifies the barriers that face women who enter more male dominated specialties, underscoring how gender plays a significant role in medical specialization, a role which may perpetuate disparities and prevent women from pursuing certain specialties. These barriers may culminate and create an atmosphere where female physicians are differentially burned out and at risk to leave the profession. There is thus an impetus to formulate ways to engender increased equity within the medical workforce, and target some of these interventions at the level of medical specialties, and specifically within the mechanism of specialty choice.

Pregnancy and Burnout at the Specialty Level

It is a worthwhile endeavor to give special consideration to the phenomena of pregnancy, and how it may affect burnout in women in various specialties. Pregnancy is a facet of work-life integration, which is a key contributor to female physician burnout (Templeton et al. 2019). Specialties which may foster environments where pregnancy is not compatible with work life can thus exacerbate burnout in female physician mothers significantly. In a nationwide study of physician mothers from various specialties, with most of these mothers being in their first ten years of practice, it was found that physician mothers did not feel that they had sufficient pregnancy leave time. Furthermore, even with this unsatisfactory leave time, some physician mothers felt they could not utilize the entirety of the leave, due to financial strain and pressure to return to their clinic responsibilities.

Furthermore, these women reported discrimination from colleagues and supervisors, as well as inadequate access to lactation facilities and time for pumping breast milk following pregnancy (Juengst et al. 2019). This is concerning, as discrimination is a key contributor to female physician burnout (Wang et al. 2020). However, it is also notable that within this study a portion of women reported positive experiences surrounding their pregnancies. This dichotomy of experiences underscores that there are disparate conditions for pregnant physician mothers across specialties and practice environments. When looking at particular specialties for instance, it has been found that physician mothers in procedural specialties report higher career dissatisfaction, loss of income, and negative impact on referrals as compared to physician mothers in non-procedural specialties (Scully et al. 2017). Thus, it is necessary to establish more uniformity regarding pregnancy policy across specialties in medicine, in order to create

working conditions for physician mothers which would facilitate work-life integration and thereby lessen burnout.

Female Physician Burnout in Hospitals and Practice Environments

In the context of an institution such as a hospital, burnout can affect women in various ways, and notably with regard to their everyday interactions with hospital resources. Administrative burden associated with EHR use is a key contributor of burnout for female physicians (McPeek-Hinz et al. 2021). Disproportionate EHR use relates to broader gender roles in society, and differential patient expectations for male and female physicians. When considering EHR use by primary care physicians in an academic hospital system, it is evident that staff and patients make more requests of female physicians, which results in greater time investment with EHR. This additional burden contributes to higher burnout rates in female PCPs (Rittenberg et al. 2022). Furthermore, in the setting of a large ambulatory network, it was also found that female physicians spend more time on EHR and EHR-based documentation throughout their workday, as well as increased investment after hours (Rotenstein et al. 2022). These studies show the pervasive influence of EHR is exacerbating burnout across practice environments.

Conclusion

In conclusion, women in medicine face distinct challenges at nearly all stages of their career that may contribute to burnout and influence their daily experiences in the field of medicine. The pandemic has only heightened the issues of equity in medicine and illuminated the contributors to burnout that differentially afflict female physicians.

Though female physicians and medical students comprise a greater proportion of the medical workforce, there are significant concerns regarding retaining these promising young women in the profession. In the span of their careers, from early education to medical school, to residency and specialties, there are cumulative barriers at every stage that may perpetuate burnout and negatively impact the experience of female physicians in medicine. Building up to the consideration of potential interventions that would effectively address burnout in Chapter Three, recognizing these challenges and their cumulative effects is key.

CHAPTER THREE

Interventions to Address Burnout Across a Female Physician's Career

Introduction and Definition of Intervention

This chapter endeavors to overview notable interventions in each aspect of a female physician's medical career and illuminate the facets of burnout that are addressed by these interventions, in addition to those that may be left unaddressed. Interventions may range from student run organizations to faculty established programs and educational materials. They may also include national conferences, and any other innovative means by which institutions and the infrastructure that surrounds female physicians at every point in their careers seeks to support and uplift them in ways that address key contributors to burnout.

A visual and explanatory presentation of interventions and their targets in Chapter Three shall serve to illuminate the positive aspects of current infrastructure which supports women in medicine, as well as advocate for further interventions and programs, thus laying the groundwork for the focal point of discussion in Chapter Four. Given the multifaceted nature of burnout, holistic efforts which target multiple aspects of burnout in women are needed to truly beget positive change (Schaufeli 2017). Interventions are explored through the stages of undergraduate education, medical school, residency, specialties, hospitals and other practice environments, with an additional consideration of larger scale interventions at the policy and governmental level.

Interventions in Undergraduate Education

For pre-medical women who are aspiring to be physicians, the time of undergraduate education can be critical in shaping early perceptions of the role of women in medicine. Furthermore, this stage often serves as the launching point of a female physician's career, thus signifying a key foundational stage that may have potential to lessen the susceptibility to burnout over the course of the medical career. In a survey of interventions at this stage, though there is not a great variety, there is a notable organization that is making strides to support pre-medical women.

The American Medical Women's Association has divisions for pre-medical students, medical students, residents, and physicians. However, in the realm of pre-medical students specifically, it is filling a distinct need, as other avenues of support are not present. The Association spans nine regions across America and provides support, resources, leadership, and mentoring (AMWA 2023). Chapters connect women to these resources, which address the key contributor of burnout, lack of support (Patel et al. 2018). Furthermore, AMWA specifically addresses the burnout contributors of gender bias and professional isolation, by providing members with a powerful sense of community via university specific organization initiatives and a national conference (Joseph et al. 2021). Other programs at universities to support women are notably limited.

Interventions in Medical School

Interventions at the medical school level are ample, though notably are often limited to organizational support systems embedded in the institution via student run organizations. Women in Medicine organizations operate under the umbrella of larger

organizations like AMWA, and such organizations, like Women in Medicine at Texas A&M, serve to support female medical students and connect them to female physicians in the community (Texas A&M Medicine 2023). Though this baseline level of support exists at many medical schools, there is a need to invest further resources to establish a deeper institutional commitment and thus more impactful support for female medical students. Such efforts are established at some institutions, such as Yale School of Medicine, where the Office for Women in Medicine and Science provides broad support for all women in the Yale Medical community (Yale School of Medicine 2023).

Furthermore, other pioneering institutions have also established programming for female medical students with the intention of increasing the number of women in leadership. At Oregon Health & Science University School of Medicine (OHSU), such a program was created in partnership between students and faculty, coined the Women's Leadership Development Program. This program provides a powerful community to female medical students through its impactful curriculum and opportunities for social support (AMA 2017). Additionally, the joint involvement of both students and faculty is notable, as it signifies a unified effort at various tiers of the institution in the pursuit of increasing the representation of women in medicine.

Another example of a commendable medical school level intervention can be found at University of North Carolina School of Medicine. A study published nearly 50 years ago presented a model for a support system that serves first-year female medical students in the school of medicine. This pilot program involved both students and faculty mentors and was found to fill a much needed gap in the female medical community by providing a place for women to delve into the shared challenges they face as current and

prospective female physicians, and thereby foster impactful relationships with their colleagues and peers (Hilberman et al. 1975). Looking at modern day UNC School of Medicine, the important work in uplifting female medical students continues through initiatives such as the Association for Professional Women in Medical Sciences (APWIMS), which goes even beyond the safe space offered in the social support group by providing a robust infrastructure where women in the school of medicine are offered opportunities to further their careers and advocate for equity in leadership (UNC School of Medicine 2023).

The investment of resources by administration has a powerful trickle-down effect on students, and the models of schools like Yale, OHSU, and UNC Chapel Hill can serve as an inspiration to create more centers for female medical students to feel heard and seen by administrators in their institutions even beyond the level of just student organizations. These interventions address the burnout contributors of professional isolation and lack of support by providing mediums by which female medical students can meaningfully connect with peers and mentors (Joseph et al. 2021, Patel et al. 2018). They also address the issue of lack of women in leadership, though not directly but rather through indirect efforts to promote equity (Joseph et al. 2021). However, hopefully these efforts will result in gradual and sustainable change so more women enter leadership positions and thus open the door for subsequent generations of female leaders in medicine.

Interventions in Residency

Interventions at the residency level aim to capture the benefits of both group focused and individual focused initiatives. For instance, an intervention involving resident physicians at Duke utilized mindfulness-based resilience training sessions. These

sessions were in a group format, and emphasized meditation and positivity, with the goal of fostering resilience in female residents. The researchers found that first and second year female residents benefit most from such an intervention (Goldhagen et al. 2015). Furthermore, another intervention at the residency level at the University of Colorado involved a clinical trial with female resident physicians. This trial aimed to determine the efficacy of an online multiformat group coaching program in reducing burnout in these resident physicians. The intervention centered around the group-coaching program Better Together Physician coaching. Uniquely, the coaches were both trained life coaches and physicians, a combination which allowed them to truly understand the challenges faced by female residents whilst also providing the valuable expertise of a trained life coach. The coaching proved to reduce emotional exhaustion and imposter syndrome in residents, while increasing self-compassion. This program further exhibited a combined institutional and individual approach to addressing female physician burnout, as it champions institutional commitment to the wellbeing of female residents while also encouraging individual responsibility for that well-being in a flexible and accessible manner (Fainstad et al. 2022). These interventions highlight innovative avenues by which impactful programming can significantly influence burnout in female physicians at the residency level.

Specialty Level Interventions

There are ample specialty specific programs and interventions that aim to ameliorate female physician burnout by the provision of leadership development opportunities and mentorship. The field of emergency medicine in particular has made great strides in implementing impactful programs for female physicians. One such

intervention in a Canadian medical institution involved mentorship opportunities hosted by faculty along with interdisciplinary roundtable discussions featuring discussion topics which abet career development and advancement. Furthermore, this intervention also included an online database of resources accessible to female physicians, comprised of educational articles and tips on teaching and interviewing. This online resource also contains a contact list of female faculty advisors who could provide valuable guidance and mentorship (Bhatia et al. 2015).

Another intervention in the emergency medicine specialty at Indiana University School of Medicine features an innovative mentorship program which encompasses the key processes of vertical mentoring, peer mentoring, and role modeling. It includes structured group mentorship sessions which took place in a collaborative setting, were children and guests were welcome. This program also features workshops and networking opportunities with national female emergency medicine leaders. A notable aspect of this program is the breadth of mentorship it encompasses, through the expansion of the female mentor pool by recruiting alumni and utilizing a combination of vertical and peer mentoring. This aspect of the intervention is incredibly useful, not only regarding its holistic view on mentorship, but also with regard to a wise use of resources which alleviate burden on current faculty through a shift to embracing alumni resources. Mentorship is a powerful avenue for the creation of strong partnerships amongst women, providing critical groundwork for them to work together in the pursuit of equity and advocacy (Welch et al. 2012). As is evident from these interventions, the creation of relationships between women is critical, as it establishes a sense of camaraderie which

can translate to tangible joint efforts towards the realization of aligned goals and initiatives, which can thereafter cascade into broader institutional change.

Interventions in Hospitals and Other Practice Environments

Interventions at the hospital or larger practice environment level can powerfully influence female physician burnout, as they reflect an institutional commitment to addressing the issue and supporting female physicians. One such intervention at Wake Forest School of Medicine was an Early Career Development Program for women faculty. This intervention involved monthly interactive sessions where female physicians could participate in a variety of activities addressing the breadth of factors contributing to burnout, including assertive communication, negotiation, and self-care. This opportunity allowed women to increase their skills and knowledge on these key topics, whilst also establishing solid networks with other women and developing a deeper understanding of the institution culture. Programs like this increase confidence in female faculty and allow for enhancement of both recruitment and retention of women (Danhauer et al. 2019).

Another such program which provides career development opportunities and allows for the creation of a powerful network amongst female physicians is affiliated with the University of California Davis School of Medicine, with the aim of aiding the success of women in academic medicine. The Women in Medicine and Health Science (WIMHS) program has a multifaceted approach which includes advocacy, promotion of strategies to enhance the institutional climate, applying data towards institutional and individual decision making, developing resources for female faculty, and more. Furthermore, the program also liaisons with the AAMC and other medical schools with the goal of advancing women in STEM on a national level. The WIMHS program has

grown to serve a diverse range of individuals beyond clinicians, including scientists, students, and other staff, and also fosters interdisciplinary relationships with entities like the school of nursing (Bauman et al. 2014). It is particularly notable that this program touches on so many aspects that influence burnout and connects them in impactful ways. Additionally, the transdisciplinary approach undoubtedly connects females across the whole institution, allowing for more powerful and effective advocacy efforts. Such interventions at the hospital level depict unity in pursuit of the shared goal of reducing female physician burnout, by means of connecting women with each other and the knowledge and resources they need to bring about positive change.

Interventions at Policy/Governmental Level

At a higher level of overarching medical institutions and policy, there are significant programs that embrace the cause of reducing female physician burnout. For instance, the Executive Leadership in Academic Medicine, or ELAM program is a fellowship initiative which allows for one year of training with ample coaching, networking, and mentorship opportunities for fellows. An innovative component of the fellowship is the Institutional Action Project, or IAP which is a project that bolsters leadership and innovation by allowing a fellow to design and implement a novel institutional initiative. This IAP reflects an integration of the ELAM program resources and peer support, which manifests into tangible impact in the fellow’s respective institution (Drexel University College of Medicine 2023). Another notable intervention is the WEL project, which is an endeavor formed by the partnership of six major healthcare organizations including the AMA and the American Medical Women’s Association. It is focused on creating a space for female physicians to receive mentorship, engage in

networking, and undergo leadership training. The curriculum of the project lies at the intersection of female physician well-being, equity, and leadership (AMA 2021). These higher-level interventions encompass the key theme of begetting change via the stream of the institution to the individual, as well as from the individual to the institution. The ELAM program depicts how individual fellows can impact their institutions in tangible ways, whereas the WEL program shows how powerful institutions can be in impacting female physician wellbeing.

Conclusion

Interventions at these various stages of a female physician's career reflect a wide array of approaches to address burnout. This is evidenced by the targets they aim to address, and the distinctive components of the interventions that shape their effectiveness in addressing said targets. The below figure depicts the complexity of these interventions, as well as the missing targets that require further programming and interventions to effectively address female physician burnout in a holistic manner (Figure 1).

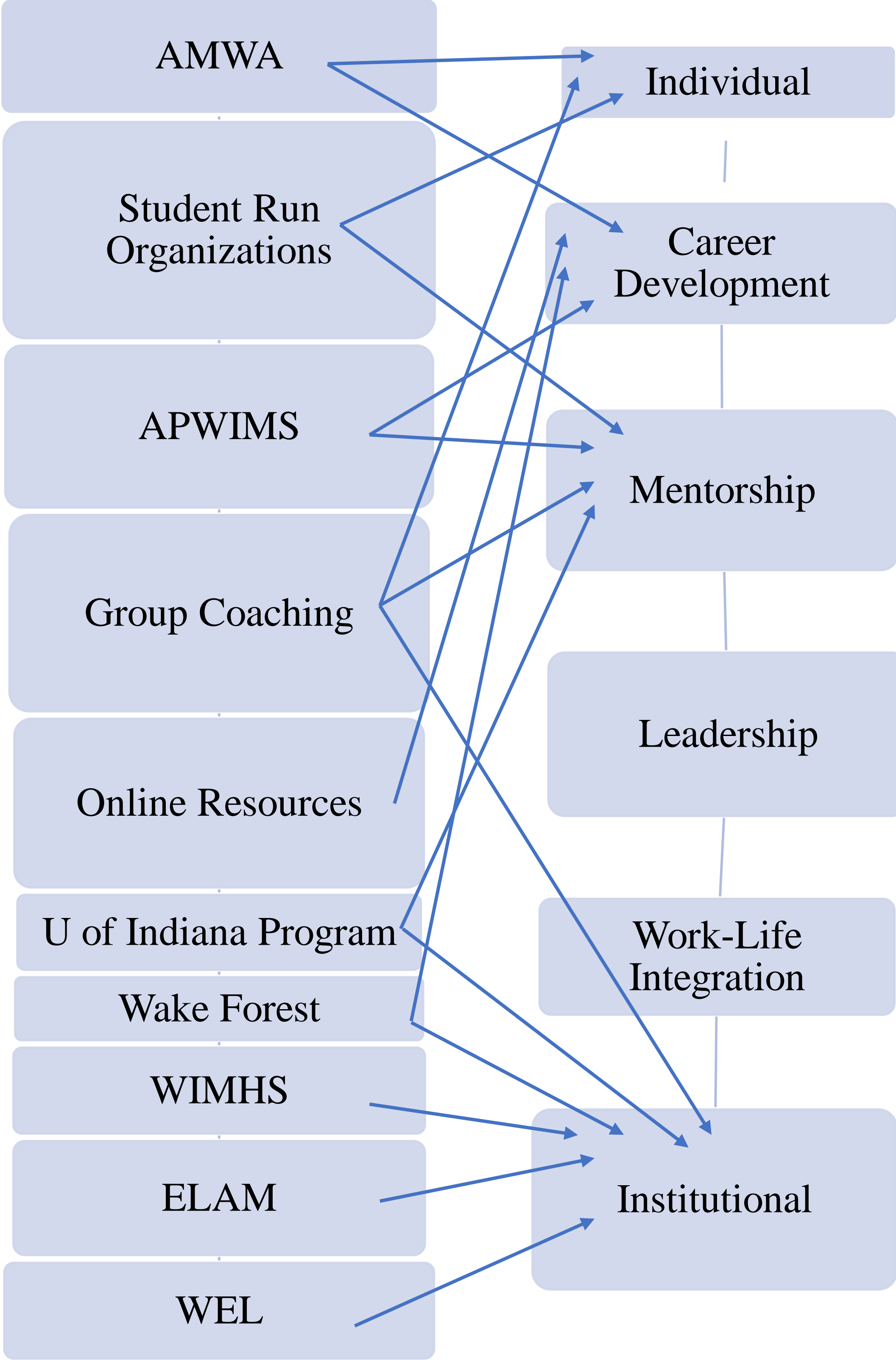

Figure 1.

CHAPTER FOUR

Appraisal of Interventions and Future Directions to Address Female Physician Burnout

Introduction

This chapter will thoughtfully appraise the burnout interventions introduced in Chapter 3, in an effort to illuminate avenues by which institutions and individuals can garner a greater positive impact in addressing female physician burnout. This chapter will consider factors such as career stage, depth of intervention, and points in the pipeline of the cumulation of burnout where it would be most efficacious to intervene. Furthermore, it will present ideas for where it would be strategic to invest more resources, as well as where there are high quality interventions which could be adapted to different settings. Furthermore, this Chapter will naturally conclude the thesis, which has thus far considered how understanding burnout and its implications is but one endeavor, which must be supplemented by an understanding of how burnout is dynamic at different phases of a woman's career, a career which encapsulates challenges and experiences that create key distinctions from a male physician's career pathway. Understanding how to best intervene, fully informed rather than isolated from this valuable knowledge, will allow institutions to save time and resources whilst effectively addressing burnout and uplifting female physicians.

Appraisal of Interventions in Undergraduate Education

At the level of undergraduate education, organizations like AMWA (American Medical Women's Association) are seen as the primary intervention at this level. AMWA

does great work in supporting female premedical women, though its scope is limited due to its role as a student organization chapter, as opposed to being directly embedded into the institution. With regard to the potential for expanding interventions at this level, promise lies in establishing institutional support for pre-medical women, which would create valuable opportunities to connect them to various other aspects of the institution. This could manifest in support and investment in mental health resources specifically for premedical women, as research shows that premedical women have higher instances of depression and burnout. For instance, premedical advisors could create connections with mental health services on campus to fortify the holistic health of their female students (Grace 2018). Furthermore, additional support programs apart from direct counseling are also missing at this level. Avenues to remedy this gap could entail support groups and similar mechanisms for bringing together female students in intentional ways, whether that be through faculty led readings courses focused on women in medicine, or mentorship programs under the jurisdiction of the Office of Pre-health which facilitate mentor relationships between senior and freshman premedical women. In terms of the efficacy of the existing interventions in addressing burnout factors which differentially affect women, it is evident that these factors are addressed through the overarching organization of AMWA, though the mechanism of having one large organization creates a lack of specific interventions targeted to address each individual facet of burnout. More specific, targeted interventions could be a fruitful addition to the undergraduate experience of female premedical students, and thus play a role in hindering the cumulation of burnout in a key point early on in a female physician’s career. Novel ideas for interventions include establishing an emphasis on the role of family planning and its

significance in a female physician's career, which could aid in absolving misconceptions about work-life balance which may dissuade bright young women from pursuing the career early on (Witherspoon et al. 2019). This intervention could be achieved through cross-disciplinary curriculum such as a course focused on Women in Medicine, which emphasizes pre-medical leadership. Furthermore, introducing more events supported by the institution's pre health program which could feature a speaker series where female physicians candidly share their experiences and address questions and misconceptions could be helpful. Finally, again in the vein of institutional involvement, establishing a Women in Pre-Medicine department under a University's Pre-health program would establish an atmosphere which could powerfully facilitate the aforementioned interventional efforts as well as numerous additional interventions that could be fortified by institutional support. These departments exist in the medical school setting, but, with a consideration of funding and resource limitations, they could also be impactful in premedical settings. Overall, interventions at this level have significant strength--AMWA has created a safe space for female pre-medical students, where they can elect to join this organization and experience its benefits. However, a higher degree of institutional commitment is necessary to create progress in dissipating burnout at this stage of a female physician's career. Institutional commitment reflected through the aforementioned intervention ideas would allow for numerous avenues by which undergraduate institutions can support women in their pre-medical journeys, and thus powerfully address burnout early in the pipeline.

Appraisal of Interventions in Medical School

When considering the strengths of interventions at the medical school level, organizations like AMWA persist in medical school settings, and AMWA even permeates subsequent stages of the profession, as there are opportunities for residents and practicing physicians to be a part of the organization. It is worth noting that such interventions which longitudinally follow female physicians throughout their careers are valuable. In addition to the continued presence of AMWA, it is noteworthy that interventions in medical schools generally feature a higher degree of institutional support. This support is a significant strength, as it allows for female physicians to feel seen and supported by their medical schools, which can contribute to breaking down harmful stereotypes. However, Offices for Women in Medicine like the office at Yale Medical School do not exist in all medical schools, and it would be greatly beneficial to have such offices available to a wider range of female medical students. Furthermore, medical school is a time where considerations of work-life integration become especially important, as women are looking ahead more seriously than they may have in the undergraduate level towards building a family and how that may fit within their careers as physicians. Therefore, in the case that more medical schools establish offices specifically for women, these offices could integrate services to aid in family planning and provide support in this endeavor. Challenges associated with work-life integration is a key contributor to burnout, which needs to be more readily addressed by the institution of medical schools (Templeton et al. 2019). This would hopefully reduce gender biases and open new specialty choices for women, as preemptive planning and absolving misconceptions would allow women greater faculty to choose specialties that they may otherwise misconceive to be incompatible with family life. Additionally, more extensive

training for medical school faculty paired with curriculum changes could aid in addressing gender-based discrimination, which encompasses issues such as the primary use of male pronouns, and differential treatment of female students (Babaria et al. 2011). Implementing such interventions could address facets of burnout which medical schools have not yet addressed, and thus allow for the diminishment of burnout and its negative repercussions in a proactive rather than reactive way, before women enter the medical workforce.

Appraisal of Interventions in Residency

At the residency level, there are ample interventions, though there is room for improving the scope of these interventions to address burnout in a holistic manner. For instance, solely individual level interventions such as mindfulness may not be effective in isolation. Though fostering individual resilience and coping skills is important, is it evident that burnout is a much broader phenomenon which warrants a more multifaceted approach. Supplementing mindfulness training with support group programs and with broad institutional support would fortify this intervention and help address the burnout contributor of professional isolation. Residency can be a difficult point in the career, as it is an extension of training but without the clear institutional boundaries that medical school offers. Female residents are more so individual agents than they were as medical students, but this agency does not preclude the need for institutional support. Residency programs could combine this agency with institutionally backed leadership programs, which would allow for both strengthening support and paving the way for more equity in leadership attainment. Furthermore, the potential challenges of intervening at this area are compounded by the presence of disparate specialties, where female residents can have

very distinct experiences interacting with their larger institutions. These are all potential considerations when creating future interventions to better address burnout at this stage. Additionally, carrying forward from the previous stages, work-life integration is a burnout contributor which could be better addressed. Incorporating more pregnancy leave and resources for childcare could aid in allowing for better integration and subsequently lessening burnout at this stage. Mentorship in this area, which could look like forums in residency orientations where older female physicians share lessons, they have learned with regard to work-life integration could also be helpful, in addition to training male faculty to be cognizant of the challenges that their female colleagues may face in this arena. It is evident that there is ample promise for further addressing burnout in female residents, and that emphasizing multifaceted approaches is necessary to create sustainable impact.

Appraisal of Interventions in Specialties

At the level of specialties, there are important considerations to be made regarding interventions that would best address burnout, given the cumulation of burnout that has already occurred over the span of a female physician's career thus far. At this point, female physicians are trained and practicing, so when considering specialties, it is important to note that the perceptions that prevent women from pursuing certain specialties, or encourage them disproportionately to pursue others, have already been formed and acted upon. Thus, in order to effectively prevent attrition, it is vital to implement interventions which address misconceptions regarding compatibility of specialties with female physicians at earlier stages, such as medical education. Having practicing physicians that serve as role models is critical and is an intervention which

could feed back to previous stages. Nearly all specialties have a larger society which governs their activities and regulations, and having this institutional infrastructure support intentional campaigns which feature inspirational female role models could be impactful. Furthermore, current differences in gender composition amongst specialties reinforces the existing pay gap between males and females (AMA 2020). While advocating for increasing pay would be helpful, interventions which transverse all the stages of a female physician's career to establish more equality in gender composition amongst specialties would be most sustainable. In terms of further interventions, utilizing the power of social media at this stage is critical. Social media campaigns, potentially launched by academies and associations which represent each specialty, could be impactful, especially if they are targeted to reach women at all stages of their career, from premedical women to senior practicing physicians. Though the utility of social media in the advancement of female physicians is an area where further research is needed, it does present a promising avenue for intervention (Shillcutt et al. 2018). Additionally, instituting specific leadership programs for women in underrepresented specialties like orthopedics and neurology would serve as an additional source of empowerment, and a tangible avenue to address not only lack of leadership representation, but also salary inequity and gender-based discrimination, as leaders can powerfully shape the culture of an organization. Though female specialists are distinct in their areas of expertise, there is a common thread tying together their experiences as women in medicine. It is thus valuable to consider novel interventions in this sphere.

Hospitals/Other Practice Environments

At the level of practicing physicians in a hospital or other practice environments such as private practices, there exist many interventions to address burnout which integrate the larger institution. These interventions are valuable, as hospitals are indeed a complex and multifaceted institution, where the needs of many stakeholders interact and often compete. Physicians are often simply seen as one of these stakeholders, lost in the complexity, which does not allow leeway for institutions to see key differences in the experiences of male and female physicians. Male and female physicians are arguably distinct stakeholders, as is evidenced by their differential interactions with hospital resources and access to opportunities. Some existing interventions address these concerns, by focusing on career development and the associated burnout contributor of professional isolation, thus addressing inequities, and providing a support system for female physicians. Future interventions such as these should implement multifaceted programs which address multiple mediums of burnout, recognizing how different factors may intersect in the context of a large organization. Concurrently, it is also important to consider the loss of autonomy that occurs at the hospital level, and how all physicians experience this loss, though female physicians may be differentially impacted by this burnout contributor (Templeton et al. 2019). Potential interventions at this stage which could address burnout incorporate the ramifications of technology on female physicians specifically. As EHR burden differentially affects females, new technologies or novel workflows which reduce this burden could be impactful in reducing burnout. There are many exciting avenues for such interventions, including adding more personnel like scribes which are already effective at many hospitals, as well as exploring novel AI solutions (Rotenstein et al. 2022). Furthermore, interventions in the context of private

practice, where the experience of female physicians are much different, are also needed. EHR changes would be beneficial in this context as well, though further research and investment is necessary to address the distinct challenges private practice physicians may face. Overall, hospitals and practice environments represent a stage where there is potential for valuable interventions which encapsulate the multifaceted nature of the institution, and the female physician's unique role within it.

Appraisal of Policy/Governmental Level Interventions

At the level of policy and the governing organizations of the medical profession, it is encouraging to see that large organizations like the American Medical Association (AMA) support women. The support of these organizations is critical to shaping the culture of medicine, and established leadership development programs further underscore the positive impact of this support. However, more work can be done at the policy level. While the AMA funds extensive lobbying efforts to advocate for the needs of the medical profession at large, there is a need to create a subset of advocacy efforts specifically for female physicians. Facets of issues like administrative burden, work-life integration, and salary inequity can be addressed through meaningful policy change. Though this would be but a small step in the process of creating long-term change, having organizations like the AMA and parallel organizations at the state level champion the causes of female physicians could be very impactful.

For instance, lack of sufficient pregnancy leave is a policy issue which can be impacted through legislation. In addition, Electronic Health Record (EHR) use is governed by federal legislation, and thus policy changes would be critical in determining the feasibility of EHR interventions in addressing administrative burden in female

physicians. Through the facilitation of organizations like the AMA and state counterparts like the Texas Medical Association, joint advocacy efforts on the part of female medical students, residents, and physicians representing various practice environments and specialties could help propel action for issues such as the lack of uniformity in pregnancy and childrearing policies across institutions. Increased participation of female physicians in the realm of policy, through avenues like congressional briefings and lobbying initiatives, would provide a powerful impetus to lawmakers to address female physician burnout.

Future Directions

Given these findings on burnout manifestation across the female physician's career and the corresponding interventions in existence to address this burnout, there are numerous fascinating avenues by which novel interventions can be implemented, or current interventions extended to better support female physicians. It is evident that over the course of their careers, female physicians pass through numerous diverse institutions, which shape their experiences in medicine. The challenges they experience and the ways in which burnout manifests differs at these various career stages, and these differences are a result of the complex interplay between the individual female physician and the institution she exists within. A pipeline exists where burnout may accumulate, as different stressors arise in the journey from premedical education to participation in the physician workforce.

Thus arises the question of where it is best to intervene in the pipeline and invest time and resources to create interventions which would mitigate female physician burnout. In an already stressed healthcare system, resources are clearly limited, and it is

subsequently important to consider where to prioritize interventions. Within the framework of the sequential stages which encompass a female physician's career, capitalizing on learning environments would be a key first step to mitigating burnout (Templeton et al. 2019). Beginning with undergraduate education, this stage may serve as a foundation for introducing interventions to address burnout early in the process of accumulation. However, because undergraduate institutions have diverse focuses apart from medicine, it is logical that this institution will not be inclined to invest as heavily in pre-medical women as the subsequent institution women encounter in their career, medical school. Thus, undergraduate education may serve as a foundation for interventional efforts, but based on the findings of this thesis medical education could serve as a pivotal focal point—a way to shut off the pipeline of burnout accumulation at the critical point before women enter the physician workforce.

However, for an approach with focused interventions at the medical school level to be effective, this requires feedback from subsequent stages of a woman's career path. For instance, as aforementioned, specialties must cooperate with medical schools to cultivate female role models and integrate women-centered resources into their programming (Baxter et al. 1996). This would greatly aid in creating gender equity amongst the specialties, as medical school is the key point where specialty choice is made. Furthermore, though interventions at the hospital and practice setting level are undoubtedly helpful and should expand in scope, these interventions may arguably be too late in the pipeline of burnout accumulation. Investing resources towards fortifying interventions at the medical school level would allow for interventions at subsequent stages to be more efficacious.

Overall, as is evidenced by the interventions presented in this thesis, future interventions should highlight coalition building, and the power of bringing female physicians together in the pursuit of common goals. Achieving this sense of comradery through interventions at various stages which focus on initiatives like mentorship, group programming and even joint advocacy in the pursuit of positive policy change would engender a unified front against burnout. Establishing this comradery early in the stage of medical education would greatly aid in the pursuit of eradicating burnout, as even when women encounter the next institutions in their careers, such as complex hospital systems, they will be equipped with a unified front to advocate for changes that would reduce burnout.

The development of such interventions would be a long-term process, as there is still much research needed to ascertain the most effective manner to intervene. For instance, it would be incredibly useful to have more longitudinal studies that follow cohorts of female physicians through all the stages of their careers. Such studies would further illuminate female physicians' interactions with institutions and stakeholders in ways that may not be achievable in the studies which characterize the current body of literature and consider burnout manifestation in disparate stages of the career rather than considering its accumulation across the career span. I am hopeful that this thesis provides a glimpse into the immense value of taking a longitudinal and cumulative approach, though much further work is needed.

Conclusion

Though great strides have been made in the interventions that exist at various stages of a female physician's career, there is also great promise in building upon these

interventions to further address burnout and create a more equitable workforce. The consideration of burnout as a cumulative process, with varied causes and ramifications allows for viewing burnout for its reality as a long term and longitudinal process which is dynamic across the career span. It does not only exist when one is working, but rather permeates into educational institutions, family life, and everyday decisions. The interventions presented in this thesis feature more institutional support later in the career, though there is a need for established, institutional backed interventions at every stage, especially early stages where burnout begins to accumulate. Burnout exists in the individual, the system, and at the critical intersection between the two. The need to address female physician burnout comes with a sense of urgency, as we contend with a post-pandemic world where the healthcare system has been strained in ways that have not even begun to manifest their consequences. Retaining female physicians should be a top priority for the coming decades, and this thesis aimed to highlight this pressing need and show that there is significant work that still needs to be done. However, there is also significant hope for a brighter future, born out of the fruits of trans-institutional collaboration and intentional effort to create positive change.

BIBLIOGRAPHY

Adams, C. J., Hough, H., Proeschold-Bell, R. J., Yao, J., & Kolkin, M. (2017). Clergy burnout: A comparison study with other helping professions. *Pastoral Psychology, 66,* 147–175. https://doi.org/10.1007/s11089-016-0722-4

Association of Resident Fatigue and Distress With Perceived Medical Errors | Depressive Disorders | JAMA | JAMA Network. (2009). Retrieved October 16, 2022, from https://jamanetwork.com/journals/jama/fullarticle/184625

Atkinson, B. F. (2009). Women physicians and the cultures of medicine. *The Journal of Clinical Investigation*, *119*(5), 1055. https://doi.org/10.1172/JCI39046

Babaria, P., Bernheim, S., & Nunez-Smith, M. (2011). Gender and the pre-clinical experiences of female medical students: A taxonomy. *Medical Education*, *45*(3), 249–260. https://doi.org/10.1111/j.1365-2923.2010.03856.x

Bauman, M. D., Howell, L. P., & Villablanca, A. C. (2014). The Women in Medicine and Health Science Program: An Innovative Initiative to Support Female Faculty at the University of California Davis School of Medicine. *Academic Medicine : Journal of the Association of American Medical Colleges*, *89*(11), 1462–1466. https://doi.org/10.1097/ACM.0000000000000403

Baxter, N., Cohen, R., & McLeod, R. (1996). The impact of gender on the choice of surgery as a career. *The American Journal of Surgery*, *172*(4), 373–376. https://doi.org/10.1016/S0002-9610(96)00185-7

Berg, S. (1995a). *How much physician burnout is costing your organization*. 3.

Berg, S. (1995b). *Physician burnout: Which medical specialties feel the most stress*. 4.

Bhatia, K., Takayesu, J. K., Arbelaez, C., Peak, D., & Nadel, E. S. (2015). An Innovative Educational and Mentorship Program for Emergency Medicine Women Residents to Enhance Academic Development and Retention. *Canadian Journal of Emergency Medicine*, *17*(6), 685–688. https://doi.org/10.1017/cem.2015.17

Bocheliuk, V. Y., Zavatska, N. Y., Bokhonkova, Y. O., Toba, M. V., & Panov, N. S. (2020). Emotional Burnout: Prevalence Rate and Symptoms in Different Socio-Professional Groups. *Journal of Intellectual Disability - Diagnosis and Treatment*, *8*(1), Article 1. https://doi.org/10.6000/2292-2598.2020.08.01.5

Celebrating 10 women medical pioneers. (2020). AAMC. Retrieved November 16, 2022, from https://www.aamc.org/news-insights/celebrating-10-women-medical-pioneers

Cordes, C. L., & Dougherty, T. W. (1993). A Review and an Integration of Research on Job Burnout. *The Academy of Management Review*, *18*(4), 621–656. https://doi.org/10.2307/258593

Danhauer, S. C., Tooze, J. A., Barrett, N. A., Blalock, J. S., Shively, C. A., Voytko, M. L., & Crandall, S. J. (2019). Development of an Innovative Career Development Program for Early-Career Women Faculty. *Global Advances in Health and Medicine*, *8*, 2164956119862986. https://doi.org/10.1177/2164956119862986

Davis, G., & Allison, R. (2013). Increasing Representation, Maintaining Hierarchy: An Assessment of Gender and Medical Specialization. *Social Thought & Research*, *32*, 17–45.

del Carmen, M. G., Herman, J., Rao, S., Hidrue, M. K., Ting, D., Lehrhoff, S. R., Lenz, S., Heffernan, J., & Ferris, T. G. (2019). Trends and Factors Associated With Physician Burnout at a Multispecialty Academic Faculty Practice Organization. *JAMA Network Open*, *2*(3), e190554. https://doi.org/10.1001/jamanetworkopen.2019.0554

Depression: What is burnout? (2020). In *InformedHealth.org [Internet]*. Institute for Quality and Efficiency in Health Care (IQWiG). https://www.ncbi.nlm.nih.gov/books/NBK279286/

Deutsch, F. M. (2007). Undoing Gender. *Gender and Society*, *21*(1), 106–127.

Dyrbye, L. N., Varkey, P., Boone, S. L., Satele, D. V., Sloan, J. A., & Shanafelt, T. D. (2013). Physician Satisfaction and Burnout at Different Career Stages. *Mayo Clinic Proceedings*, *88*(12), 1358–1367. https://doi.org/10.1016/j.mayocp.2013.07.016

Ellis, R. J., Holmstrom, A. L., Hewitt, D. B., Engelhardt, K. E., Yang, A. D., Merkow, R. P., Bilimoria, K. Y., & Hu, Y.-Y. (2020). A comprehensive national survey on thoughts of leaving residency, alternative career paths, and reasons for staying in general surgery training. *The American Journal of Surgery*, *219*(2), 227–232. https://doi.org/10.1016/j.amjsurg.2019.10.040

Estimates of Costs of Primary Care Physician Turnover. (1999). Retrieved October 16, 2022, from https://www.ajmc.com/view/nov99-749p1431-1438

Fainstad, T., Mann, A., Suresh, K., Shah, P., Dieujuste, N., Thurmon, K., & Jones, C. D. (2022). Effect of a Novel Online Group-Coaching Program to Reduce Burnout in

Female Resident Physicians: A Randomized Clinical Trial. *JAMA Network Open*, *5*(5), e2210752. https://doi.org/10.1001/jamanetworkopen.2022.10752

Frank, E., Zhao, Z., Sen, S., & Guille, C. (2019). Gender Disparities in Work and Parental Status Among Early Career Physicians. *JAMA Network Open*, *2*(8), e198340. https://doi.org/10.1001/jamanetworkopen.2019.8340

Frontline Perspectives on Physician Burnout and Strategies to Improve Well-Being: Interviews with Physicians and Health System Leaders | SpringerLink. (2019). Retrieved October 16, 2022, from https://link.springer.com/article/10.1007/s11606-019-05381-0

Gold, K. J., Sen, A., & Schwenk, T. L. (2013). Details on suicide among US physicians: Data from the National Violent Death Reporting System. *General Hospital Psychiatry*, *35*(1), 45–49. https://doi.org/10.1016/j.genhosppsych.2012.08.005

Goldhagen, B. E., Kingsolver, K., Stinnett, S. S., & Rosdahl, J. A. (2015). Stress and burnout in residents: Impact of mindfulness-based resilience training. *Advances in Medical Education and Practice*, *6*, 525–532. https://doi.org/10.2147/AMEP.S88580

Grace, M. K. (2018). Depressive symptoms, burnout, and declining medical career interest among undergraduate pre-medical students. *International Journal of Medical Education*, *9*, 302–308. https://doi.org/10.5116/ijme.5be5.8131

Hilberman, E., Konanc, J., Perez-Reyes, M., Hunter, R., Scagnelli, J., & Sanders, S. (1975). Support groups for women in medical school: A first-year program. *Academic Medicine*, *50*(9), 867.

Hoff, T., & Lee, D. R. (2021). Burnout and Physician Gender: What Do We Know? *Medical Care*, *59*(8), 711–720. https://doi.org/10.1097/MLR.0000000000001584

Jeung, D.-Y., Kim, C., & Chang, S.-J. (2018). Emotional Labor and Burnout: A Review of the Literature. *Yonsei Medical Journal*, *59*(2), 187–193. https://doi.org/10.3349/ymj.2018.59.2.187

JOB BURNOUT - HOW PEOPLE COPE | Office of Justice Programs. (1978). Retrieved October 16, 2022, from https://www.ojp.gov/ncjrs/virtual-library/abstracts/job-burnout-how-people-cope

Job Control and Burnout across Occupations. (2005). https://doi.org/10.2466/pr0.97.3.955-961

Jones, Y., Durand, V., Morton, K., Ottolini, M., Shaughnessy, E., Spector, N. D., & O'Toole, J. (2020). Collateral Damage: How COVID-19 Is Adversely Impacting

Women Physicians. *Journal of Hospital Medicine*, *15*(8), 507–509. https://doi.org/10.12788/jhm.3470

Jordan, R. K., Shah, S. S., Desai, H., Tripi, J., Mitchell, A., & Worth, R. G. (2020). Variation of stress levels, burnout, and resilience throughout the academic year in first-year medical students. *PLOS ONE*, *15*(10), e0240667. https://doi.org/10.1371/journal.pone.0240667

Joseph, M. M., Ahasic, A. M., Clark, J., & Templeton, K. (2021). State of Women in Medicine: History, Challenges, and the Benefits of a Diverse Workforce. *Pediatrics*, *148*(Supplement 2), e2021051440C. https://doi.org/10.1542/peds.2021-051440C

Juengst, S. B., Royston, A., Huang, I., & Wright, B. (2019). Family Leave and Return-to-Work Experiences of Physician Mothers. *JAMA Network Open*, *2*(10), e1913054. https://doi.org/10.1001/jamanetworkopen.2019.13054

Kwon, E. (2017). “For Passion or for Future Family?” Exploring Factors Influencing Career and Family Choices of Female Medical Students and Residents. *Gender Issues*, *34*(2), 186–200. https://doi.org/10.1007/s12147-016-9168-3

Lee, R. T., Seo, B., Hladkyj, S., Lovell, B. L., & Schwartzmann, L. (2013a). Correlates of physician burnout across regions and specialties: A meta-analysis. *Human Resources for Health*, *11*(1), 48. https://doi.org/10.1186/1478-4491-11-48

Leiter, M. (1991). The dream denied: Professional burnout and the constraints of human service organizations. *Canadian Psychology / Psychologie Canadienne*, *32*, 547–558. https://doi.org/10.1037/h0079040

Lu, D. W., Hartman, N. D., Druck, J., Mitzman, J., & Strout, T. D. (2019). Why Residents Quit: National Rates of and Reasons for Attrition Among Emergency Medicine Physicians in Training. *Western Journal of Emergency Medicine*, *20*(2), 351–356. https://doi.org/10.5811/westjem.2018.11.40449

Manzano- García, G., & Ayala-Calvo, J.-C. (2013). Nuevas perspectivas: Hacia una integración del concepto de burnout y sus modelos explicativos. *Anales de Psicología*, *29*(3), 800–809. https://doi.org/10.6018/analesps.29.3.145241

Marchalik, D., Brems, J., Rodriguez, A., Lynch, J. H., Padmore, J., Stamatakis, L., & Krasnow, R. (2019). The Impact of Institutional Factors on Physician Burnout: A National Study of Urology Trainees. *Urology*, *131*, 27–35. https://doi.org/10.1016/j.urology.2019.04.042

Maslach, C. (2003). Job Burnout: New Directions in Research and Intervention. *Current Directions in Psychological Science*, *12*(5), 189–192. https://doi.org/10.1111/1467-8721.01258

Maslach, C., & Goldberg, J. (1998). Prevention of burnout: New perspectives. *Applied and Preventive Psychology*, *7*(1), 63–74. https://doi.org/10.1016/S0962-1849(98)80022-X

McPeek-Hinz, E., Boazak, M., Sexton, J. B., Adair, K. C., West, V., Goldstein, B. A., Alphin, R. S., Idris, S., Hammond, W. E., Hwang, S. E., & Bae, J. (2021). Clinician Burnout Associated With Sex, Clinician Type, Work Culture, and Use of Electronic Health Records. *JAMA Network Open*, *4*(4), e215686. https://doi.org/10.1001/jamanetworkopen.2021.5686

More, E. S., Fee, E., & Parry, M. (2009). *Women Physicians and the Cultures of Medicine*. Johns Hopkins University Press.

Nadkarni, A., & Biswas, J. (2022). Gender Disparity in Cognitive Load and Emotional Labor—Threats to Women Physician Burnout. *JAMA Psychiatry*, *79*(8), 745–746. https://doi.org/10.1001/jamapsychiatry.2022.1382

Nation's physician workforce evolves: More women, a bit older, and toward different specialties. (2021). AAMC. Retrieved October 28, 2022, from https://www.aamc.org/news-insights/nation-s-physician-workforce-evolves-more-women-bit-older-and-toward-different-specialties

National Academies of Sciences, E. (2021). *The Impact of COVID-19 on the Careers of Women in Academic Sciences, Engineering, and Medicine*. https://doi.org/10.17226/26061

Papovic, S. (2009). Professional Burnout Syndrome. *Materia Socio-Medica*, *21*(4), 213.

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 Wellness Is an Ethical and Public Health Issue—Rosandra Walker, Harold Pine, 2018. (n.d.). Retrieved October 16, 2022, from https://journals.sagepub.com/doi/abs/10.1177/0194599818773296?casa_token=hmYeSIBJpfUAAAAA%3AgcSiWBmnv2SN66mRCnxUSXLLcWOZCh5Lig-&journalCode=otoj

Posig, M., & Kickul, J. (2003). Extending our understanding of burnout: Test of an integrated model in nonservice occupations. *Journal of Occupational Health Psychology*, *8*(1), 3. https://doi.org/10.1037/1076-8998.8.1.3

Premedical Students. (n.d.). *American Medical Women's Association*. Retrieved February 6, 2023, from https://www.amwa-doc.org/pre-medical-students/

Richter, K. P., Clark, L., Wick, J. A., Cruvinel, E., Durham, D., Shaw, P., Shih, G. H., Befort, C. A., & Simari, R. D. (2020). Women Physicians and Promotion in Academic Medicine. *New England Journal of Medicine*, *383*(22), 2148–2157. https://doi.org/10.1056/NEJMsa1916935

Rittenberg, E., Liebman, J. B., & Rexrode, K. M. (2022). Primary Care Physician Gender and Electronic Health Record Workload. *Journal of General Internal Medicine*, *37*(13), 3295–3301. https://doi.org/10.1007/s11606-021-07298-z

Rodrigues, H., Cobucci, R., Oliveira, A., Cabral, J. V., Medeiros, L., Gurgel, K., Souza, T., & Gonçalves, A. K. (2018). Burnout syndrome among medical residents: A systematic review and meta-analysis. *PLOS ONE*, *13*(11), e0206840. https://doi.org/10.1371/journal.pone.0206840

Rosenthal, L., Levy, S. R., London, B., Lobel, M., & Bazile, C. (2013). In Pursuit of the MD: The Impact of Role Models, Identity Compatibility, and Belonging Among Undergraduate Women. *Sex Roles*, *68*(7–8), 464–473. https://doi.org/10.1007/s11199-012-0257-9

Rossi, A. M., Perrewé, P. L., & Sauter, S. L. (2006). *Stress and Quality of Working Life: Current Perspectives in Occupational Health*. IAP.

Rotenstein, L. S., Fong, A. S., Jeffery, M. M., Sinsky, C. A., Goldstein, R., Williams, B., & Melnick, E. R. (2022). Gender Differences in Time Spent on Documentation and the Electronic Health Record in a Large Ambulatory Network. *JAMA Network Open*, *5*(3), e223935. https://doi.org/10.1001/jamanetworkopen.2022.3935

Schaufeli, W. B. (2017). Burnout: A Short Socio-Cultural History. In S. Neckel, A. K. Schaffner, & G. Wagner (Eds.), *Burnout, Fatigue, Exhaustion* (pp. 105–127). Springer International Publishing. https://doi.org/10.1007/978-3-319-52887-8_5

Scully, R. E., Davids, J. S., & Melnitchouk, N. (2017). Impact of Procedural Specialty on Maternity Leave and Career Satisfaction Among Female Physicians. *Annals of Surgery*, *266*(2), 210–217. https://doi.org/10.1097/SLA.0000000000002196

Shanafelt, T. D., & Noseworthy, J. H. (2017). Executive Leadership and Physician Well-being: Nine Organizational Strategies to Promote Engagement and Reduce Burnout. *Mayo Clinic Proceedings*, *92*(1), 129–146. https://doi.org/10.1016/j.mayocp.2016.10.004

Shanafelt, T. D., Boone, S., Tan, L., Dyrbye, L. N., Sotile, W., Satele, D., West, C. P., Sloan, J., & Oreskovich, M. R. (2012). Burnout and Satisfaction with Work-Life Balance Among US Physicians Relative to the General US Population. *Archives of Internal Medicine*, *172*(18), 1377–1385. https://doi.org/10.1001/archinternmed.2012.3199

Shapiro, J., Zhang, B., & Warm, E. J. (2015). Residency as a Social Network: Burnout, Loneliness, and Social Network Centrality. *Journal of Graduate Medical Education*, *7*(4), 617–623. https://doi.org/10.4300/JGME-D-15-00038.1

Shillcutt, S. K., & Silver, J. K. (2018). Social Media and Advancement of Women Physicians. *New England Journal of Medicine*, *378*(24), 2342–2345. https://doi.org/10.1056/NEJMms1801980

Silver, M. A., Portnoy, S., & Peters, J. K. (2004). *Stress, Burnout, Vicarious Trauma, and Other Emotional Realities in the Lawyer/Client Relationship*. 30.

Taris, T. W., Bakker, A. B., Schaufeli, W. B., Stoffelsen, J., & Van Dierendonck, D. (2005). Job Control and Burnout across Occupations. *Psychological Reports*, *97*(3), 955–961. https://doi.org/10.2466/pr0.97.3.955-961

Templeton, K., Bernstein, C. A., Sukhera, J., Nora, L. M., Newman, C., Burstin, H., Guille, C., Lynn, L., Schwarze, M. L., Sen, S., & Busis, N. (2019). Gender-Based Differences in Burnout: Issues Faced by Women Physicians. *NAM Perspectives*. https://doi.org/10.31478/201905a

The 12 factors that drive up physician burnout. (2020). American Medical Association. Retrieved October 27, 2022, from https://www.ama-assn.org/practice-management/physician-health/12-factors-drive-physician-burnout

These medical specialties have the biggest gender imbalances. (2019). American Medical Association. Retrieved November 30, 2022, from https://www.ama-assn.org/medical-students/specialty-profiles/these-medical-specialties-have-biggest-gender-imbalances

This project creates "sisterhood of support" for women physicians. (2021, September 21). American Medical Association. https://www.ama-assn.org/delivering-care/health-equity/project-creates-sisterhood-support-women-physicians

Thrush, C. R., Guise, J. B., Gathright, M. M., Messias, E., Flynn, V., Belknap, T., Thapa, P. B., Williams, D. K., Nada, E. M., & Clardy, J. A. (2019). A One-Year Institutional View of Resident Physician Burnout. *Academic Psychiatry*, *43*(4), 361–368. https://doi.org/10.1007/s40596-019-01043-9

Timmermans, S. (2020). The Engaged Patient: The Relevance of Patient–Physician Communication for Twenty-First-Century Health. *Journal of Health and Social Behavior*, *61*(3), 259–273. https://doi.org/10.1177/0022146520943514

Turner, T. B., Dilley, S. E., Smith, H. J., Huh, W. K., Modesitt, S. C., Rose, S. L., Rice, L. W., Fowler, J. M., & Straughn, J. M. (2017). The impact of physician burnout on clinical and academic productivity of gynecologic oncologists: A decision

analysis. *Gynecologic Oncology*, *146*(3), 642–646. https://doi.org/10.1016/j.ygyno.2017.06.026

Walker, G. A. (1986). Burnout: From Metaphor to Ideology. *The Canadian Journal of Sociology / Cahiers Canadiens de Sociologie*, *11*(1), 35–55. https://doi.org/10.2307/3340447

Wang, L. J., Tanious, A., Go, C., Coleman, D. M., McKinley, S. K., Eagleton, M. J., Clouse, W. D., & Conrad, M. F. (2020). Gender-based discrimination is prevalent in the integrated vascular trainee experience and serves as a predictor of burnout. *Journal of Vascular Surgery*, *71*(1), 220–227. https://doi.org/10.1016/j.jvs.2019.02.064

Welch, J. L., Jimenez, H. L., Walthall, J., & Allen, S. E. (2012). The Women in Emergency Medicine Mentoring Program: An Innovative Approach to Mentoring. *Journal of Graduate Medical Education*, *4*(3), 362–366. https://doi.org/10.4300/JGME-D-11-00267.1

Witherspoon, E. B., Vincent-Ruz, P., & Schunn, C. D. (2019). When Making the Grade Isn’t Enough: The Gendered Nature of Premed Science Course Attrition. *Educational Researcher*, *48*(4), 193–204. https://doi.org/10.3102/0013189X19840331

Women in medical schools: Dig into latest record-breaking numbers. (2021). American Medical Association. Retrieved November 16, 2022, from https://www.ama-assn.org/education/medical-school-diversity/women-medical-schools-dig-latest-record-breaking-numbers

Worly, B., Verbeck, N., Walker, C., & Clinchot, D. M. (2019). Burnout, perceived stress, and empathic concern: Differences in female and male Millennial medical students. *Psychology, Health & Medicine*, *24*(4), 429–438. https://doi.org/10.1080/13548506.2018.1529329

Why women leave medicine. (2019). AAMC. Retrieved November 16, 2022, from https://www.aamc.org/news-insights/why-women-leave-medicine