2021

# Physician assistant burnout and emotional resilience in emergency medicine

BOSTON UNIVERSITY

SCHOOL OF MEDICINE

Thesis

# PHYSICIAN ASSISTANT BURNOUT AND EMOTIONAL RESILIENCE IN EMERGENCY MEDICINE

by

**ALLISON TSOMIDES**

B.S., Bates College, 2014

Submitted in partial fulfillment of the

requirements for the degree of

Master of Science

2021

Approved by

First Reader _____

Dan Tzizik, M.P.H, M.P.A.S, PA-C
Associate Director of Didactic Education

Second Reader _____

John Weinstein, Ph.D.
Director of Research

**PHYSICIAN ASSISTANT BURNOUT AND EMOTIONAL RESILIENCE IN EMERGENCY MEDICINE**

**ALLISON TSOMIDES**

ABSTRACT

**Background**

The physician assistant profession has grown from its original emergence as a strategy to improve family practice and rural healthcare. Rising emergency department visits and the plateau of physicians entering the profession has contributed to a growing number of PA positions in emergency medicine. Currently, emergency medicine is the third largest practice setting, employing 13% of certified PAs. Unfortunately, little is known about the factors contributing to their resilience to remain in a high stress work environment.

**Literature Review**

The literature review in this study is composed of past research on burnout, uncertainty intolerance, and resilience in emergency medicine practitioners. In summary, the comprehensive review suggests that emergency medicine practitioners, including PAs, suffer a high degree of burnout. However, the factors contributing to this burnout differ between physicians and PAs. Self-directedness, persistence, and cooperation are associated with resilience among family medicine practitioners, but there is a lack of research on the personality traits that affect emergency medicine and EMPAs.

**Proposed Research**

This thesis proposes a longitudinal cohort study that will investigate burnout, stress resilience, and personality trait patterns among emergency medicine PAs compared to the general PA population.

**Conclusion**

The study will match emergency medicine PAs with general population PAs based on demographics. Data on burnout, stress resilience, and personality dimensions will be analyzed using a chi-square test and Pearson correlation coefficient to elucidate any differences. The proposed research is meant to better understand and prevent the burnout syndrome, which is associated with negative patient outcomes, higher healthcare costs, and serious mental health strain.

## TABLE OF CONTENTS

ABSTRACT ..... iv

TABLE OF CONTENTS ..... vi

LIST OF TABLES ..... viii

LIST OF ABBREVIATIONS ..... ix

INTRODUCTION ..... 1

Background ..... 1

Statement of the Problem ..... 2

Hypothesis ..... 3

Objectives and specific aims ..... 4

REVIEW OF THE LITERATURE ..... 5

Overview ..... 5

METHODS ..... 22

Study design ..... 22

Study population and sampling ..... 22

Treatment (or intervention) ..... 23

Study variables and measures ..... 23

Recruitment ..... 26

Data collection ..... 26

Data analysis ..... 26

Timeline and resources ..... 27

Institutional Review Board ..... 29

CONCLUSION ..... 30

Discussion ..... 30

Summary ..... 31

Clinical and/or public health significance ..... 32

LIST OF JOURNAL ABBREVIATIONS ..... 34

REFERENCES ..... 36

CURRICULUM VITAE ..... 42

## LIST OF TABLES

Table 1. Factors Associated with Burnout. Data is from an MBI survey of 600 randomly selected PAs from Redi-Data state licensing database. Adapted from Dyrbye et al. 2020..... 15

Table 2. Burnout Levels by MBI Subscales. Data is from an MBI survey sent to members of SEMPA in 1999. Adapted from Bell et al 2002. ..... 17

Table 3. Factors Associated with High Resilience. Data is from a multidimensional survey of 308 practitioners in a rural upstate New York hospital network. Adapted from Waddimba et al. 2016. ..... 18

Table 4. Range of scores indicating levels of burnout by sub-scale. Adapted from Lee, et al, 2017..... 24

Table 5. Temperament and Character Trait Descriptors. Adapted from Eley et. al., 2013. ..... 25

Table 6. Timeline of proposed study goals ..... 28

## LIST OF ABBREVIATIONS

AAMC..... Association of American Medical Colleges

AAPA..... American Academy of Physician Assistants

ACEP .....American College of Emergency Physicians

BRS .....Brief Resilience Scale

BU ..... Boston University

CAH .....Critical Access Hospital

DO.....Doctor of Osteopathic Medicine

ED ..... Emergency Department

EM..... Emergency Medicine

EMPA .....Emergency Medicine Physician Assistant

IRB..... Institutional Review Board

MBI..... Maslach Burnout Inventory

MBI-HSS ..... Maslach Burnout Inventory-Human Services Survey

MD .....Doctor of Medicine

NCCPA ..... National Commission on Certification of Physician Assistants

NP ..... Nurse Practitioner

PA ..... Physician Assistant

SEMPA ..... Society of Emergency Medicine Physician Assistants

TCI ..... Temperament and Character Inventory

VHA..... Veterans Health Administration

# INTRODUCTION

## Background

Originally, the physician assistant (PA) profession was established to extend the capabilities of primary care physicians in rural communities.[1] Since the 1980s, there has been a shift away from primary care to more specialized fields.[1] As of 2019, there were over 130,000 certified PA graduates with over 31% working in surgical specialty settings or emergency medicine (EM).[2,3] Emergency departments (EDs), especially, have seen a rise in the utilization of PAs. The percentage of emergency departments utilizing PAs increased from 28% in 1997 to 77% in 2006, with a total of 14% of the total workforce (8,465 PAs) working primarily in the ED by 2014.[4] The ED currently attracts over 12% of PA graduates as a primary site of work.[2,3] And, with critical shortages of physicians in many rural EDs, PAs assume a greater responsibility for patient care with less supervision.[4] One solution to meet this increasing demand, has been a growth in the number of nurse practitioners (NPs) and PAs employed in EM to fill staffing roles.[4] Utilizing PAs in the ED reduces wait times and cost and does not increase morbidity or mortality.[2,4,5] Therefore, it is expected that the demand for EMPAs and the percentage of graduates entering this specialty will continue to rise.[2]

A challenge faced by EDs is the increasing prevalence of chronic diseases such as hypertension, coronary artery disease, and heart failure in a growing elderly population exacerbated by high rates of obesity in the United States.[6,7] Although primary care providers play an important role in caring for this population, many of these patients are seen in the emergency department for acute treatment. In fact, this disease burden is

expected to increase the number of emergency department visits by 8-12% by 2025.[6] Increased demand for specialty providers could lead to an expansion of the PAs scope of practice to bolster the health care system. Due to the generalist nature of the PA education, their career flexibility allows for quick adaptation that could alleviate physician shortages, expand access to care, and facilitate a shift to a value-based reimbursement model.[7,8]

Although the need for critical care in EDs is expected to continue its upward trend, the number of emergency physicians entering the field has reached a plateau.[8–10] Despite over 10% of PAs practicing in emergency medicine,[9] ED crowding and wait times are worsening.[11] Therefore, there has been a push to take advantage of PA skills to tackle the lack of space and staffing in ED settings.[10] This has led to a greater reliance on EMPAs to provide care such as wound management, acute care transfer, fast track staffing, and rural health staffing.[2,10] The significant variation in national and state regulations, organization, and team dynamic allows for the role of the PA to be influenced by the needs of the collaborating physician and patient population.[12] While the training that PAs receive provides a good foundation for adapting to changing staffing and patient populations in EM, changing clinical roles can present a challenge to work environment, professional growth, and job satisfaction.

**Statement of the problem**

Burnout was originally described by American psychologist Herbert Freudenberger in the 1970s for healthcare professionals suffering from job-related psychological and physical exhaustion.[5] Although extensive research has been done on

physician burnout in emergency medicine (EM), little is known about burnout and emotional resilience among EMPAs that remain in that specialty setting. Burnout in emergency medicine is characterized by a high prevalence of emotional exhaustion[13] and among physicians, protection from this exhaustion is associated with autonomy, uncertainty tolerance, and job satisfaction.[14] PAs were recruited for emergency services almost immediately following the establishment of the profession and their role has grown considerably since the 1960s.[10] According to the job demands theory proposed by Lambert and Lambert in 2001, burnout increases with greater role expansion.[7] With emergency medicine in the top three practice areas employing 13% of PAs[3] and the number of emergency department visits surging[10], it is important to understand the factors contributing to burnout and stress adaptation. In physicians, resilience is associated with a mature personality trait pattern characterized by self-directedness, persistence, and cooperation.[15] However, the differences and variability in the role of physicians compared to PAs affect burnout and resilience and therefore warrants further research.

**Hypothesis**

Emergency medicine physician assistants experience higher burnout rates than PAs of other specialties. Despite this, PAs in EM exhibit greater stress resilience than the general population of PAs and a specific personality trait pattern that make them better equipped to cope with and adapt to the challenges of emergency medicine.

**Objectives and specific aims**

Data on burnout rates, resilience factors, and personality trait patterns will be analyzed to determine differences between emergency medicine physician assistants and physician assistants of other specialties. Overall, this study will:

- Determine the factors of burnout, stress resilience, and personality traits in emergency medicine physician assistants
- Compare the factors of burnout, stress resilience, and personality traits of emergency medicine physician assistants to other specialties

## REVIEW OF THE LITERATURE

### Overview

Despite the growing role for PAs in EM[10,11], it is relatively unknown if the expanding responsibilities contribute to negative psychological sequelae and the burnout syndrome associated with EM practitioners.[7,16] The physician assistant (PA) profession emerged in 1967 as a possible strategy to improve access, cost, and quality of health care, primarily in rural areas and family practice.[10,12] Several years after the PA profession was instituted, many hospitals began hiring mid-level providers, such as nurse practitioners (NPs) and physician assistants (PAs), to fill an anticipated gap in inpatient primary care. The Graduate Medical Education National Advisory Report projected a surplus of physicians by the year 2000.[17] Due to this anticipated surplus the report recommended internal medicine hiring freezes and a reduction in specialized training, leading to budget cuts. For these reasons alternative staffing for medical and surgical floors, critical care units, and emergency rooms was implemented, including PAs originally meant to serve outpatient rural communities.[17]

The growing need for specialty PAs led to a shift in training. PA training programs began adding care for acutely ill patients into the curriculum and the physician assistant role expanded. [17] Specialized duties included writing orders after physician consult, managing patients admitted for both intensive care and observation, performing initial physical examination and initiating therapy, administering medications and resuscitation, performing invasive procedures under supervision, and communicating with next of kin.[17]

The emerging PA role was almost immediately utilized in emergency settings and the use of PAs in EM continues to rise due to the substantial number of emergency department (ED) visits and the plateau of emergency physicians entering the profession. In addition to the emergency medicine (EM) physician shortage, insufficient hospital funds to hire more physicians, and difficulty with recruitment to underserved areas has led to an increasing use of PAs in the ED.[4,9] The rate of ED visits is predicted to double by 2025.[10] Utilization of physician assistants is a way to meet these increasing health care demands, reduce cost, maximize efficiency, and increase provider-to-patient ratios.[4,10] Overall PA numbers are expected to increase to over 122,720 by 2024[7], with approximately 13% practicing EM as their primary specialty as of 2019.[3]

The role for PAs in EM is continually expanding due to issues such as capped resident work hours, emergency department (ED) crowding, and increasing wait times.[10,11] Certain innovative programs take advantage of PAs specialized skills to reduce ED wait times by creating laceration repair clinics and implementing transition teams to streamline transfers.[10] Furthermore, PAs working in rural EDs have a greater scope of practice, less supervision, and fewer resources than urban EDs.[4]

A study done in remote Washington communities on Critical Access Hospitals (CAHs) found that the PAs working in the ED reported they enjoyed their role and attributed much of their job satisfaction to their level of autonomy.[4] Autonomous PAs are defined as having no more than 8 hours per week with their supervising physician.[18] Another study done on the level of supervision among EMPAs found that PAs with more than 15 years of experience were more likely to report spending less than 10% of their

time consulting their supervising physician.[19] This finding indicates that the level of PA autonomy may be inevitable as they gain more experience, particularly in this specialty. In addition to their increased job satisfaction and overall enjoyment, autonomous PAs seemed more confident in their knowledge and ability which played a role in their perception of the treatment they were providing. Career flexibility and the opportunity to change specialties are also thought to contribute to PA job satisfaction and retention. Only 45% of physicians would select their specialty again given the chance, with over 50% admitting symptoms of burnout.[20] Comparatively, at least half of all PAs were found to change specialties at least once in their career, with 20% switching from a specialty such as emergency medicine to family practice.[8]

Rural community emergency department staffing is particularly challenging. Compared to urban areas, rural populations face disparities in healthcare access due to financial, sociocultural, structural, and geographical barriers. CAHs, defined as having no more than 25 inpatient beds, annual average length of stay of no more than 96 hours for acute inpatient care, and located in a rural area at least 35 miles from any other hospital, make up 17% of hospitals in America.[4] Many rural residents would avoid seeking necessary care without CAHs[4], and without PAs in these communities many hospitals would be forced to close.[10] With less than 11% of the nation's physicians working in rural areas, emergency departments in CAHs are using PAs and NPs to meet staffing needs. A 2006 survey found that most rural hospitals used a combination of staffing to cover the ED. 14% of hospitals used PAs without on-site supervision and a physician on call.[10]

Poor access to primary care has been reported to contribute to the rising number of emergency department cases.[4] Today, there continues to be a shortage of primary care providers. The Association of American Medical Colleges (AAMC) predicted a shortage of 124,000 physicians with 65,800 of those accounting for primary care deficits by 2025[9] and the American Academy of Physician Assistants reported a drop in PAs working in primary care from 50.8% in 1996, to 31% in 2010.[21] Contributing to these shortages are an increasing number of physicians retiring early due to burnout and job dissatisfaction[22] and significant annual turnover rates; 12% of PAs in primary care and 6% of primary care physicians.[7] The number of providers in primary practice is not expected to be sufficient for an aging population and expanding insurance coverage.

The growing demand puts an increasing reliance on PAs to deliver primary care services as shortages increase and evidence of the benefit to team-based care grows. Data indicates that patient satisfaction and chronic disease outcomes are improved in team-based practitioner settings. At the same time, a strong team culture has been suggested as potential protection from physical and emotional exhaustion among providers.[20]

The number of non-physician practitioners in chronic disease management is increasing. A study from 2005 to 2010, showed PAs attending approximately 30% of all primary care visits in the Veterans Health Administration (VHA). In a retrospective analysis of ED cases at a rural hospital in Maine, it was revealed that PAs made no significant treatment or diagnostic errors.[23] Similar to this analysis, there were no significant variations in diagnoses between physicians, PAs, and NPs.[24]

However, as more responsibilities are shifted to the PAs the risk of burnout may also increase especially in settings lacking team support. Burnout is characterized by emotional exhaustion, lack of enthusiasm for work, reduced sense of personal accomplishment, and cynicism.[20] It is correlated to long-term job stress and appears to be increasing, particular among certain specialties. Burnout has been found to be more prevalent in critical care, oncology, emergency medicine, and among female providers.[16,20,25] The effects of burnout on job performance and psychological health include substance abuse, job turnover, depression, and medical error. Due to these serious effects, burnout has emerged as a health care systems issue and has even been proposed to be added to the Institute for Healthcare Improvement's Triple Aim for improving health care.[20]

Not surprisingly, job satisfaction, defined as the degree to which individuals experience positive feelings about their job, has been found to be negatively correlated with burnout.[20,26] Job satisfaction has five facets, which put together can be used to assess global satisfaction. The first is the work itself, including the person's job responsibility, interest in the work, and growth within the position. The second facet is quality of collegiate and physician supervision, as well as technical support. The third refers to relationships with co-workers, including the respect received. The fourth is promotion opportunities, or chances of career advancement, and the final facet is adequacy of pay. Job dissatisfaction and burnout is widespread among health care professionals and can negatively affect the quality of patient care.[20]

Psychological aspects of the PA profession such as stress, job satisfaction, job retention, and emotional and professional burnout may be favorably affected by more complex work and role expansion, particularly in specialties such as EM.[7] This theory of 'job enrichment' proposed in 1971 by Hackman and Lawler, describes an association between increased autonomy, enhanced motivation, and decreased feelings of burnout. Job enrichment theory posits that an empowered work environment positively reinforces satisfaction and personal accomplishment.[7] This argument supports the continually expanding role for PAs in EM and identifies a possible strategy for reducing burnout while maintaining high-level patient care.

An opposing view presented by Lambert and Lambert suggests that increased work demands and more complex roles may lead to a reduction in motivation and frustration due to the strain of new tasks. They suggest that the worker may feel that such performance expectations are beyond their perceived capabilities and feel overwhelmed. This may be especially true if the motivation for an increased workload stems from forced situations, such as physician shortages and access to care.[7] The ED is particularly prone to the pressure of these shortages because of long, unpredictable shifts and the constraints and delays in the patient admission process.[10] This viewpoint may help characterize specific factors within the work environment that can lead to increased turnover and burnout.

Both NPs and PAs showed higher levels of intrinsic job satisfaction, while exhibiting lower levels of extrinsic job satisfaction. Higher levels of intrinsic satisfaction in the PA profession refer to the job's inherent features and indicate that a sense of

perceived control and autonomy contribute to a greater sense of accomplishment.[7,26] This is consistent with Hackman and Lawler's proposed job enrichment theory that upskilling enhances motivation and overall professional gratification. However, there seems to be a lower extrinsic job satisfaction in certain employment settings due to lack of teamwork, pace of work, and poor compensation.[7] This idea lends to Lambert and Lamberts theories on expanded roles leading to higher stress and negative feelings of accomplishment. Due to the individualistic nature of these complaints, it is difficult to draw a generalizable conclusion. Yet it seems that the idea of job satisfaction is complex and confounded by mixed feelings. Job satisfaction can be a reflection of employee treatment and organizational functioning, but it alone is not a constant predictor of work performance.[26]

The founding father of the positive psychology movement, Martin Seligman, described the movement as a study of what constitutes a pleasant, engaged, and meaningful life.[27] With rising levels of burnout, anxiety, and stress among medical professionals the positive psychology movement has influenced a transition from emphasizing factors of burnout to focusing on coping strategies and stress resilience. Optimizing resilience can create a work environment in which clinicians are able to adapt and can thrive in their practice instead of exhibiting compassion fatigue, depersonalization, and a low sense of personal accomplishment. Stress resilience is especially important to address in emergency medicine practitioners. EM providers are at an increased risk of burnout due to high volume, acuity, and complexity of patients with a need for rapid decision making in ambiguous situations.[28]

Waddimba et. al. defined resilience as the extent to which individuals positively cope with work stress or adversity by adapting effectively, bouncing back from it, and maintaining or enhancing their well-being in their study on physicians in upstate New York.[14] Multiple factors go into developing resistance including personality traits, team mentality, organization, resources, and social factors. Fredrickson explained the Broaden and Build theory in 2001, stating individuals who activate positive emotions build a greater resilience.[29] This is closely aligned with meaningfulness and satisfaction with work. The extent to which clinicians have a positive state of mind and derive meaning from their work is thought to correlate inversely to burnout.[14] Similarly, tolerance for uncertainty is thought to buffer stress and protect against burnout. Those who perceive the uncertain as desirable or intellectually stimulating and an opportunity to grow tend to have a greater resilience.[14]

Several studies have compared burnout and job satisfaction in physicians versus physician assistants with some notable differences. Whitebird et. al. looked at physician, NP, and PA burnout in caring for complex patients. Surveys containing questions on satisfaction, burnout, resources, and perceptions of ability were sent to providers caring for patients with depression, diabetes, and/or cardiovascular disease in 8 different states across the United States. Out of the 709 responses, this study found that 82% of primary care MDs and DOs were moderately to very satisfied with their career compared to 95% of PAs and NPs ($P<0.002$).[30] One-third of clinicians expressed symptoms of burnout, particularly those that were less satisfied with their careers. This suggests that PAs and

NPs who have a higher level of job satisfaction, may experience less burnout than MDs and DOs.

Similar to this study, Shannon and Merenstein compared lifestyle satisfaction of physicians and physician assistants in orthopedics. Surveys were emailed to orthopedic clinics across the country asking seven questions on lifestyle and career satisfaction. Remarkably, PAs differed significantly from physicians on four out of the seven questions. PAs reported being more likely to recommend their career to someone else (P=0.0049), less likely to switch specialties if they could (P=0.0001), less likely to feel that their professional life overshadows a personal one (P=0.0013), and less likely to feel that stress and demand from the job negatively affects their health (P=0.0086).[31]

In contrast, Freeborn et. al. compared physician and nonphysician primary care burnout in Portland, Oregon and found that PAs/NPs (61%) were significantly more likely than physicians (42%) to experience a great deal of daily stress (P=0.03).[32] Despite this, a higher proportion were satisfied with their careers (P=0.04).

This combined evidence indicates that despite the general consensus among PAs that their careers are satisfactory, burnout remains a problem and the factors that contribute may differ from those affecting physicians.

**Existing research**

The first national study of burnout and job stress in PAs was done by Coplan et al. Data was gathered from a 2016 American Academy of PAs (AAPA) salary survey that included questions adapted from the Medscape Physician Lifestyle Report relating to job satisfaction, burnout, and stress. Although there was a low response rate for questions

relating to burnout, the entire PA population was surveyed, resulting in over 7,000 respondents.

In regards to burnout indicators, 27% of all PAs reported a high enthusiasm for work with 21.4% reporting some degree of cynicism, and only 7.5% exhibiting a high or extreme degree. Most PAs reported a sense of personal accomplishment, with only 10.4% admitting some degree of low personal accomplishment. Several factors contributing to stress were identified, with "spending too many hours at work" and "income not high enough" being the highest (5 on a Likert scale of 1-7). Notably, 42.7% reported quitting their job at least once due to stress, with an additional 12.8% reporting considering quitting due to burnout.[20]

This study was useful to gain insight into what factors may contribute to work stress, but it had limitations. Although adapting questions from the Medscape Physician Lifestyle Report was meant to allow a burnout comparison between physicians and PAs, a direct comparison in this study was not possible due to lack of raw data. Additionally, the low response rate and self-report nature of the survey may have led to nonresponse bias and limited generalizability. Finally, factors contributing to stress and burnout such as specialty setting and number of years in practice were not analyzed.

A similar study on burnout and job satisfaction in PAs was done more recently by Dyrbye et al. This 2020 study surveyed 600 randomly selected PAs from a Redi-Data database of state licensing information. They were assessed using the validated MBI method with emotional exhaustion, depersonalization, and personal accomplishment subcategories of burnout.

Analysis of the 22-item MBI revealed that 30.5% had high emotional exhaustion, 24.5% had high depersonalization, and 13% felt a low sense of personal accomplishment. In combination, 41.4% exhibited high emotional exhaustion or depersonalization and considerable signs of burnout. Additionally, approximately 65.3% felt satisfied with their work-life integration and 67% with their control over workload. Interestingly, 91.5% reported being satisfied with their autonomy.

Across subspecialties, the prevalence of burnout differed. After controlling for all other factors, and PAs working in emergency medicine were found to be at the highest risk. Two other factors, work-life integration dissatisfaction and lack of control over workload, were found to contribute to burnout while having children protected against burnout (Table 1). Overall, the general population of PAs were found to have 38% increased odds of burnout relative to other workers (P= 0.002).

**Table 1. Factors Associated with Burnout.** Data is from an MBI survey of 600 randomly selected PAs from Redi-Data state licensing database. Adapted from Dyrbye et al. 2020.

| Variable | OR (95% CI) | *P* value |
|---|---|---|
| **Have children** | 0.38 (0.21, 0.66) | <0.001 |
| **Work in emergency medicine** | 2.73 (1.3, 5.75) | 0.008 |
| **Neutral/dissatisfied with work-life integration** | 2.92 (1.85, 4.6) | <0.0001 |
| **Neutral/dissatisfied with control over workload** | 4.21 (2.67, 6.63) | <0.0001 |

This study was a national sample of PAs from various settings and specialties, but it was limited in several aspects. Like most studies done previously, it was a cross-sectional analysis so it is difficult to determine causation. It is also susceptible to

nonresponse bias due to the 29.5% response rate, but this bias has not been seen in previous studies done on physicians. Despite the possible drawbacks, this study was able to elucidate several individual characteristics of burnout, thereby lending itself to possible strategies of improving work-life integration, such as scheduling control and reducing work hours.

Despite the large number of PAs identifying emergency medicine as their primary specialty, there have been a limited number of studies done on factors contributing to their mental health, such as stress, coping skills, and burnout. One of the first ever studies focusing on burnout in emergency medicine physician assistants (EMPAs) was published by Bell et al. in 2002. Bell et al. used the Maslach Burnout Inventory (MBI) and EMPA demographic, work, and lifestyle characteristics survey to assess the level of burnout in SEMPA members, and identify any associated individual characteristics.

Out of the 160 surveys returned, 59% showed moderate or high emotional exhaustion, 66% showed moderate or high depersonalization, characterized by mental distancing and a tendency to treat others as objects[33], and 34% showed moderate or low sense of personal accomplishment (Table 2). Several individual characteristics from the EMPA survey showed significantly ($P<0.05$) higher levels of self-assessed burnout including female gender, planning to leave emergency medicine within one-year, low satisfaction with physician supervisor, smoking 1 to 2 packs of cigarettes a day, drinking more than 6 alcoholic beverages a week, and more frequent insomnia. Interestingly, there was not a significant correlation between years worked in emergency medicine and self-assessed burnout ($P = 0.078$).

**Table 2. Burnout Levels by MBI Subscales.** Data is from an MBI survey sent to members of SEMPA in 1999. Adapted from Bell et al 2002.

| | Mean | | Low | | Moderate | | High | |
|---|---|---|---|---|---|---|---|---|
| Subscale | % | SD | % | n | % | n | % | n |
| Emotional exhaustion | 21.1 | 11.4 | 41.3 | 66 | 32.5 | 52 | 26.2 | 42 |
| Depersonalization | 10.6 | 6.8 | 34.4 | 55 | 30 | 48 | 35.6 | 57 |
| Personal accomplishment | 39.9 | 6.6 | 66.2 | 106 | 20 | 32 | 13.8 | 22 |

The MBI has been used previously in studies on burnout, mainly on physicians. It provides a useful tool for reliably measuring emotional exhaustion, depersonalization, and personal accomplishment and comparing those subtypes across various health care professionals. However, this was a small study done on one sample population of PAs (SEMPA members) and it gathered limited data on emergency department practice setting and volume.

Although the aforementioned studies have addressed some aspects of burnout in various clinical specialties and among different level providers, there has been limited analysis on stress resilience and inherent protection mechanisms against occupational exhaustion and fatigue. Waddimba et. al. addressed some of the relationships between resilience and burnout among physicians and mid-level providers, including physician assistants, in rural New York.[14] Cross-sectional data was gathered using a multidimensional questionnaire containing questions regarding resilience (ex. “I tend to bounce back quickly after hard times”), autonomy, sense of personal accomplishment, risk-taking, feelings toward uncertainty/ambiguity, workload, and demographics. Each

factor was analyzed on the Brief Resilience Scale (BRS) described by Smith et. al. for high resilience (BRS≥4) and low resilience (BRS≤2).[34]

Of the 308 providers that completed the survey, 32% felt that they were burnt out. The median BRS score was 3.7, with 63.9% of respondents reporting a high resilience and 7.6% reporting a low resilience. Factors with a significant ($P < 0.05$), independent association with high resilience were lower uncertainty intolerance, more frequent satisfaction, number of practitioners on a unit, and autonomy (Table 3).

**Table 3. Factors Associated with High Resilience.** Data is from a multidimensional survey of 308 practitioners in a rural upstate New York hospital network. Adapted from Waddimba et al. 2016.

| Variable | OR (95% CI) | *P* value |
|---|---|---|
| **Autonomy** | 1.4 (1.1, 1.9) | 0.010 |
| **Uncertainty intolerance** | 0.6 (0.5, 0.8) | 0.0002 |
| **Satisfaction with practice >75% of the time** | 1.0 (1.0, 1.1) | <0.0001 |
| **Additional providers on the unit** | 3.6 (1.9, 6.9) | 0.022 |

This study emphasizes the importance of teamwork, optimism, and courage in health professionals to combat the effects of stress and burnout. However, it would be interesting to see if these findings remain the same if submitted to specialty setting analyses, such as emergency medicine. Furthermore, this study was limited to rural settings and it is unclear of the generalizability or of possible selection bias introduced by the survey methodology. Despite these limitations, there was a high response rate and reliable measures of analysis from previous literature were used.

A study done by Kuhn, Goldberg, and Compton addressed similar questions about burnout, career satisfaction, and uncertainty tolerance specifically in emergency medicine physicians.[28] Questionnaires were sent to all members of the American College of Emergency Physicians (ACEP) that were actively practicing emergency medicine. Each section was composed of 3 sections; work-life satisfaction, uncertainty tolerance, and burnout. Work-life satisfaction was analyzed by questions on autonomy, resources, work relationships, lifestyle satisfaction, and emergency medicine challenges from the validated Career Satisfaction Survey of Emergency Physicians. Uncertainty tolerance was analyzed on a 4-scale survey containing anxiety caused by uncertainty, concern about bad outcomes, reluctance to disclose uncertainty to patients, and reluctance to disclose mistakes to physicians. The third section analyzed measures of burnout from the Maslach Burnout Inventory.

Of the 193 questionnaires returned, 62% reported high levels of burnout and dissatisfaction with autonomy (OR=1.8), emergency medicine challenges (OR=2.2), and life stress (1.8) were significantly associated with this finding. Additionally, anxiety caused by uncertainty (OR=1.7) and concern about bad outcomes (OR=6.4) were related to career burnout. Controlling for all other variables, anxiety caused by concern for bad outcomes was the greatest predictor of burnout, particularly emotional exhaustion.

Unfortunately, like many studies using survey methodology there was a low response rate. This study attempted to mitigate nonresponse bias by including best- and worst-case outcomes if responders were or were not burned out. All survey questions were from validated sources, but factors not examined may affect burnout.

Eley et. al. conducted a cross-sectional cohort study of family practitioners across Australia to investigate the relationship of resilience to personality traits in order to better train health care providers to cope with the challenges of their profession. A self-report questionnaire was sent to family practitioners via Regional Family Practitioner Training Providers and the Australian College of Rural and Remote Medicine. The survey contained the previously validated Temperament and Character Inventory (TCI)[35] that identifies seven basic dimensions of personality and a Resilience Scale. The TCI included a Likert scale from one (absolutely false) to five (absolutely true) regarding novelty seeking, harm avoidance, reward dependence, persistence, self-directedness, cooperativeness, and self-transcendence. The Resilience Scale was measured on a one (strongly disagree) to seven (strongly agree) Likert scale reflecting the core characteristics of resilience: perseverance, equanimity, meaningfulness, self-reliance, and existential aloneness.[36]

Of the 479 completed questionnaires, most family practitioners experienced very high (84-100%) reward dependence, persistence, self-directedness, and cooperativeness and moderately high (131-145) resilience. Additionally, resilience was most strongly correlated with high self-directedness (r=0.530) and low harm avoidance (r=-0.426) and moderately correlated with high persistence (r=0.446) and high cooperativeness (r=0.258).[15]

This study was the first to provide data on the personality correlates of resilience in physicians. At 61%, the response rate was high for survey methodology data collection

but the self-reported nature may have introduced bias. Furthermore, the sample population was specific to family medicine which limits the generalizability.

**Summary**

The literature review suggests that emergency medicine PAs feel a strong sense of personal accomplishment, but suffer from moderate to high burnout. Although emergency medicine physicians are most affected by uncertainty intolerance, particularly a concern for bad outcomes, it is likely that EMPAs emphasize different factors due to their role differences. In addition, resilience in family medicine physicians is associated with self-directedness, persistence, and cooperation, but it is relatively unknown if this extends to emergency medicine or EMPAs. To elucidate differences, this study will investigate burnout, stress resilience, and personality trait patterns among emergency medicine PAs by sending a survey to EMPAs and the general PA population.

## METHODS

### Study design

To achieve the goals of the study, the researcher team will conduct a randomized multi-specialty, longitudinal cohort study to identify factors of burnout and emotional resilience in EMPAs compared to PAs in other sub-specialties. The data will be divided into three sections (burnout, stress resilience, and personality dimensions) and analyzed to demonstrate correlations between emotional resilience traits and burnout among EMPAs and the general population of PAs.

### Study population and sampling

EMPAs will be recruited using the Society of Emergency Medicine Physician Assistants (SEMPA) members. EMPAs recruited from this database will be compared to the general population of PAs recruited from the larger National Commission of Certification of Physician Assistants (NCCPA) database. Physician assistants showing symptoms of burnout in the initial survey will be excluded.

Using an average burnout rate among emergency medicine practitioners of 32%, this study will require a sample size of 149 EMPAs to achieve a power of 80% at a level of significance of 5% to detect a difference in burnout and emotional resilience for EMPAs compared to the general PA population.[37] Assuming an average response rate of 30%, surveys will be sent to 500 emergency medicine PAs. EMPAs will be matched to PAs from the NCCPA database based on sex and age. These matches will be followed over the course of two years for evidence of burnout.

**Treatment (or intervention)**

To determine the burnout, stress resilience, and personality dimensions of EMPAs, the independent primary variable is the field of practice. The field of practice will be determined by whether a PA is working primarily in an emergency department setting versus a separate specialty.

**Study variables and measures**

Demographic information will be gathered using the NCCPA database. This will include sex, age, race and ethnicity, practice setting, geographical location, and length of time practicing as a PA. This will allow emergency medicine PAs to be accurately matched with the general PA population.

The primary outcomes measured will be burnout rate, factors of stress resilience, and personality dimensions. These will be measured using a survey that consists of three parts. The first section will measure burnout using the Maslach Burnout Inventory-Human Services Survey (MBI-HSS). The second will measure resilience and will consist of the Brief Resilience Scale. Finally, the third will measure personality dimensions and will consist of the Temperament and Character Inventory.

The MBI-HSS has been validated in healthcare personnel and used previously to study burnout in emergency physicians.[13,16,20] It is designed to assess the three subscales of the burnout syndrome: emotional exhaustion, depersonalization, and reduced personal accomplishment. There are 22 items, written in the form of statements about personal feelings or attitudes, such as “I feel burned out from my work” and “I don’t really care what happens to some patients”. The responses are answered in terms of frequency on a

7-point scale (from 0- “never”, to 6- “every day”). Burnout is measured on a continuum of either high, moderate, or low for each subscale (Table 4).[38] According to Maslach and more conservative studies, a high degree of burnout is characterized by both high scores in emotional exhaustion and depersonalization low scores in personal accomplishment.[39] However, this approach may underestimate the true burnout rate. Alternatively, studies done by Schaufeli and other researchers defines burnout as high scores on emotional exhaustion and/or depersonalization, but not a low score in personal accomplishment.[40] This more liberal definition may overestimate the true burnout level. A common validated compromise is to consider individuals as experiencing burnout if they have high scores in emotional exhaustion along with either a high score in depersonalization or a low score in personal accomplishment.[40]

**Table 4. Range of scores indicating levels of burnout by sub-scale.** Adapted from Lee, et al, 2017.

| | LOW | MODERATE | HIGH |
|---|---|---|---|
| Emotional exhaustion | 0-16 | 17-26 | 27+ |
| Depersonalization | 0-6 | 7-12 | 13+ |
| Personal accomplishment | 39+ | 32-38 | 0-31 |

Resilience will be assessed using the Brief Resilience Scale. The Brief Resilience Scale has been proven as a valid and reliable means of assessing resilience in people coping with health-related stressors.[14,34] It is designed to assess the ability to bounce back or recover from stress. There are three positively worded items such as, “I tend to bounce back quickly after hard times” and three negatively worded items such as, “I tend to take

a long time to get over set-backs in my life". Each item is rated in agreement on a 5-point Likert scale (1- "strongly disagree" to 5- "strongly agree"). Scores can be formatted as a continuous variable and a binary outcome of high (scores≥4) versus low resilience (scores≤2).[14]

The Temperament and Character Inventory (TCI) has been validated in adult populations across the world and each scale correlates with other personality tests, such as the five-factor personality model, that predict mature coping.[15,35] The TCI is a 140 item self-report questionnaire designed as a psychobiological model of personality that accounts for temperament and character, the major components of personality. It is composed of the seven basic dimensions of personality, four temperament traits (novelty seeking, harm avoidance, reward dependence, and persistence) and three character traits (self-directedness, cooperativeness, and self-transcendence). Each trait is multifaceted and responses are rated on a 5-point Likert scale (1- "absolutely false to 5- "absolutely true"). Descriptions of high versus low scores for each trait are summarized in Table 5.

**Table 5. Temperament and Character Trait Descriptors.** Adapted from Eley et. al., 2013.

| **Temperament Traits** | Low Score | High Score |
|---|---|---|
| Novelty seeking | Orderly, reflective, tolerant, reserved | Exploratory, curious, seeks challenge |
| Harm avoidance | Confident, accepting of uncertainty and risk | Worrying, anxious, unable to accept risk |
| Reward dependence | Not influenced by others, objective, insensitive | Needs to please, warm, attached |
| Persistence | Quitting, underachiever, erratic, unambitious | Ambitious, diligent, perfectionist |
| **Character Traits** | | |

| | | |
|---|---|---|
| Self-directedness | Blaming, ineffective, unreliable | Conscientious, self-accepted, reliable |
| Cooperativeness | Intolerant, unhelpful, opportunistic, critical | Tolerant, agreeable, constructive, empathic |
| Self-transcendence | Impatient, proud, materialistic, practical | Patient, humble, spiritual, creative |

**Recruitment**

Data will be obtained by request from the SEMPA and NCCPA database. The randomly selected participants will initially be emailed twice asking for participation. If they choose to participate in the survey, their names will be entered into a raffle to win one of four $250 gift cash prizes.

**Data collection**

Demographic information will be obtained from the NCCPA database. The three-part SurveyMonkey questionnaire will be emailed to the SEMPAs and the matched NCCPA general population PAs. Unique identifiers will be included in the survey to retain the anonymity of the participants. Informed consent will be obtained from all participants.

**Data analysis**

The demographic information of each group including age, sex, race and ethnicity, geographic location, practice setting, practice volume, years practicing, and years at current position.

The data from the three-part questionnaire will be analyzed for differences between emergency medicine PAs and the general PA population, as well as, correlations between burnout and factors of emotional resilience. Data from the MBI will be analyzed

as both dichotomous and continuous results reported as scores, percentages, and burnout versus non-burnout. It will be further analyzed using a chi-square to determine the significance of any differences noted between the two groups.

Data from the BRS will also provide both dichotomous and continuous outcomes formatted as scores, percentages, and high versus low resilience. It can be further analyzed using chi-square to determine the significance of any differences and Pearson correlation coefficient to determine any association between resilience and burnout.

Data from the TCI will be reported as both dichotomous and continuous outcomes formatted as Likert scores and high versus low descriptors. It can be further investigated using Pearson correlation coefficient to determine any association between measures of temperament and character dimensions and resilience or burnout. Multiple regression analyses can be used to determine the amount of variance in resilience or burnout explained by TCI traits.

Due to the matching of demographic information, there will be no adjustments made for any of the outcomes.

**Timeline and resources**

This study will be completed by multiple investigators. One will be in charge of contacting emergency medicine PAs from the SEMPA. A second investigator will gather demographic information from the NCCPA and contact the matched general population PAs. The resources needed include access to the SEMPA and NCCPA databases and a statistician. The current timeline (Table 6) is to submit for IRB approval, obtain funding, and analyze data from SEMPA and NCCPA by winter 2021. This will be followed by the

SurveyMonkey questionnaire and one reminder sent to the random participants by summer 2022. The initial data will be analyzed and sorted based on the exclusion criteria. Follow-up surveys will be sent every six months for a total of two years. Data will be excluded if the participant changes positions during that time. Finally, the total data will be analyzed and a submission for peer review will be sent by winter 2025.

**Table 6. Timeline of proposed study goals**

| Time | Goal(s) |
|---|---|
| Fall 2021 | Submission for IRB approval |
| Winter 2021 | Obtain funding<br>Request access to SEMPA and NCCPA<br>Analyze data provided by NCCPA |
| Spring 2022 | SurveyMonkey questionnaire sent to PAs |
| Summer 2022 | Reminder requests sent to PAs |
| Fall 2022 | Data analyzed from initial responses |
| Spring 2023 | Follow-up survey #1 sent to PAs |
| Fall 2023 | Follow-up survey #2 sent to PAs |
| Spring 2024 | Follow-up survey #3 sent to PAs |
| Fall 2024 | Final follow-up survey sent to PAs |
| Winter 2025 | Manuscript submission for peer review |

## Institutional Review Board

The study protocol will require Institutional Review Board (IRB) board review and approval as exempt status. This study does involve human subjects, but poses no more than minimal risk to the subjects. It involves survey procedures with adults by which the information obtained is recorded in such a manner that the identity of the subject cannot be ascertained.[41]

# CONCLUSION

## Discussion

Since its establishment, the physician assistant profession has grown extensively and PAs have proven to be adaptable health professionals in a variety of settings.[9] Emergency medicine is currently the 3rd highest practice area, employing approximately 12.8% of certified PAs.[3] Among EMPAs, the level of autonomy and scope of practice varies widely depending on practice setting and supervising physician.[12] This study determines the burnout rate and emotional resilience traits associated with emergency medicine PAs compared to the general population of PAs.

There are several limitations in the current literature on burnout and emotional resilience. Overall there has been extensive research on physician burnout in emergency medicine, but limited studies on burnout in EMPAs and none that focus on the emotional resilience factors of EMPAs. The majority of studies have been small and only incorporate one sample population, which limits their generalizability.[7] There has also been a lack of robust study designs, specifically an over-emphasis on cross-sectional design types with no subgroup analyses, which prevents cause and effect relationships from being examined.[7] Finally, most studies relied on self-report survey data, which introduces potential biases.

The limitations of this study include potential nonresponse bias, due to limited survey responses. Additionally, the self-report nature of this study could introduce social desirability bias due to a tendency of participants to under-report burnout symptoms so as not to portray undesirable attributes. Further, this may not be representative of all EMPAs

because participants are being recruited from one sample population (SEMPA members) and may have a higher job satisfaction.

Despite the potential limitations, this study will be the first to assess emotional resilience in EMPAs. It is also the first to strengthen the data by using a longitudinal study design to identify changes in burnout over time and ensure the factors evaluated are causational rather than correlational. By using the MBI-HSS, BRS, and TCI measures, the data will be comparable to previous research done on burnout and emotional resilience among physicians. The data will elucidate the different aspects of burnout affecting EMPAs and the specific personality dimensions that stand out in this practice setting.

**Summary**

The collective literature review of the research done on physician and PA burnout revealed some common similarities. In general, all specialties have encouraged the employment of non-physician practitioners to combat the increasing need for accessible and affordable healthcare and the mounting shortage of physician personnel.[6,7,10] Studies project there will be an additional 27 million Americans with hypertension, 8 million with coronary heart disease, and 3 million with heart failure[6,42] and many of these patients will be seen in the ED.[6] Therefore, increased utilization of PAs and an expansion of their scope of practice is a strategic necessity.[7,10]

It is useful to recall the two theories of job enrichment. Hackman and Lawler support the view that more complex roles enhance motivation, improving job satisfaction and reducing burnout.[7] The opposing viewpoint illustrated by Lambert and Lambert

suggests that increased job demands accompanying role expansion cause frustration, decreased motivation, lower job satisfaction, and increased burnout.[7] Overall, EMPAs have been found to have the highest rates of burnout compared to other specialties and US workers.[13] Previous studies on burnout in emergency medicine PAs seem to support Lambert and Lambert's viewpoint on role expansion, with dissatisfaction with control over workload contributing to high burnout levels.[13,16,20] However, EMPAs exhibit a higher sense of personal accomplishment suggesting autonomy and role expansion may play more of a role in job satisfaction than preventing burnout.[13,16,20] This is consistent with studies done on burnout in physicians, with the addition of anxiety due to uncertainty and a concern for bad outcomes contributing to burnout.[28] In addition, a high persistence in synergy, high self-directedness, and low harm avoidance have been found to be helpful for a successful adaptation to demanding work schedules.[43]Although this will be the first study to analyze these dimensions in EMPAs, a study done on family medicine physicians yielded consistent results.[15]

This study will help fill in the knowledge gap on burnout in EMPAs and better understand the factors associated with emotional resilience. This information will help with treatment and prevention of burnout in the PA profession, including better communication, employee assistance programs, and job redesign.

**Clinical and/or public health significance**

Burnout was added to the mental health lexicon in the 1970s. It is known to affect a large percentage of those in the healthcare profession and can have serious physical and

behavioral consequences.[44,45] This study is meant to elucidate data on emotional resilience factors to better understand and prevent the burnout syndrome.

Preventing burnout is important because it has negative consequences on patient care, healthcare costs, and healthcare providers health and safety. Previous studies have found that burnout is associated with a doubled risk of medical error[46] and a 17% increased risk of a medical malpractice suit.[47] Furthermore, significant correlations have been found between provider burnout and patient satisfaction[48] and adherence to medical advice.[49,50] Additional studies have identified an association with higher standardized patient mortality ratios[51] and longer recovery times for hospitalized patients.[52]

There is also a financial burden associated with burnout. Burnout-related turnover has been estimated at $5,000-$10,000 per year, not including expenditures due to medical error, malpractice, and lower productivity.[53,54] One study done on physicians using the MBI measurements found that for every 1-point increase in emotional exhaustion, there was a corresponding 28% reduction in productivity.[55] Decreased professional effort creates further strain on healthcare systems already struggling due to an aging population and an increasing prevalence of chronic disease.[6,7]

Finally, preventing professional exhaustion in healthcare providers is critically important to their own health. Burnout in healthcare professionals has been correlated with depression and impairment, including a 25% increased odds of alcohol abuse[56], a doubled risk of suicide[57,58], and an increased risk of motor vehicle accidents.[59] These outcomes can be prevented by restructuring job expectations, implementing recruitment and retention strategies, and inciting motivation.[7]

## LIST OF JOURNAL ABBREVIATIONS

| | |
|---|---|
| Acad Med | Academic Medicine |
| Am J Manag Care | The American Journal of Managed Care |
| Am Psychol | American Psychologist Journal |
| Ann Emerg Med | Annals of Emergency Medicine |
| Ann Surg | Annals of Surgery |
| Arch Surg | Archives of Surgery |
| BMJ | British Medical Journal |
| CJEM | The Canadian Journal of Emergency Medicine |
| Cogent Med | Cogent Medicine |
| Eval Health Prof | Evaluation and the Health Professions |
| Front Psychol | Frontiers in Psychology |
| Gen Hosp Psychiatry | General Hospital Psychiatry |
| Health Aff | Health Affairs |
| Health Serv Res | Health Services Research |
| Hum Resour Health | Human Resources for Health |
| Ind Psychiatry J | Industrial Psychiatry Journal |
| Inf Manage | Information and Management |
| Int J Behav Med | International Journal of Behavioral Medicine |
| JAAPA | Journal of the American Academy of PAs |
| J Affect Disord | Journal of Affective Disorders |
| J Am Coll Surg | Journal of the American College of Surgeons |

| | |
|---|---|
| JAMA | Journal of the American Medical Association |
| J Gen Intern Med | Journal of General Internal Medicine |
| J Intern Med | Journal of Internal Medicine |
| J Maine Med Assoc | The Journal of the Maine Medical Association |
| J Nurs Meas | Journal of Nursing Measurement |
| J Oncol Pract | The Journal of Oncology Practice |
| J Physician Assist Educ | The Journal of Physician Assistant Education |
| Occup Med | Journal of Occupational Medicine |
| Mayo Clinic Proc | Mayo Clinic Proceedings |
| Med Care Res Rev | Medical Care Research and Review |
| PeerJ | Peer Journal |
| Psychol Health | Journal of Health Psychology |
| West J Emerg Med | Western Journal of Emergency Medicine |

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