Loyola University Chicago

Loyola eCommons

Dissertations

Theses and Dissertations

Fall 2022

Burnout, Collective Efficacy, and the Social Network of a Unit

Amy Kiefer

Follow this and additional works at: https://ecommons.luc.edu/luc_diss

Part of the Nursing Commons

LOYOLA UNIVERSITY CHICAGO

BURNOUT, COLLECTIVE EFFICACY, AND THE SOCIAL NETWORK OF A UNIT

A DISSERTATION SUBMITTED TO

THE FACULTY OF THE GRADUATE SCHOOL

IN CANDIDACY FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

PROGRAM IN NURSING

BY

AMY K. KIEFER

CHICAGO, IL

AUGUST 2022

ACKNOWLEDGEMENTS

To all the past and future nurses who care for our loved ones.
To my family and friends who care for me.

And once the storm is over, you won't remember how you made it through, how you managed to survive. You won't even be sure, whether the storm is really over. But one thing is certain. When you come out of the storm, you won't be the same person who walked in. That's what this storm's all about.

—Harumi Murakami, *Kafka on the Shore*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Burnout affects greater than 50% of healthcare workers, with a higher prevalence found in newly licensed nurses, leading to a lower quality of patient care, with higher reported missed care, and medication errors. Burnout is a syndrome caused by organizational stress and is characterized as feelings of exhaustion, cynicism, and inefficacy. Research has explored burnout at the individual level, and little is known about how unit level variables affect or are related to burnout. The purpose of this study was to examine the effects of collective efficacy and nurses' social network on burnout. A descriptive, cross-sectional survey method was used to assess 75 interprofessional providers on a unit at a 547-bed, level I trauma center in the Midwestern United States. Data were collected using surveys and analyzed using social network analysis and linear and multiple regression. Results from this study highlight the importance of the significant correlation between collective efficacy and burnout, and the potentially protective effect collective efficacy has on burnout. Results from the study also revealed a deeper understanding of burnout, specifically how social network analysis methods can be used to identify which individuals are at a greater risk of burnout, are identified as central to a unit's social network, and potential ways to mitigate the development of burnout at a unit level.

Keywords: Burnout, interprofessional, social network analysis, collective efficacy, nursing, nurses

CHAPTER ONE

PROBLEM

Background

Burnout is a syndrome characterized by exhaustion, depersonalization, and inefficacy in one's professional life that is associated with chronic organizational stress (Maslach & Leiter, 2016). Exhaustion is the individual's feeling of being overextended by one's professional work. Depersonalization is the act of unfeeling or removing the personal aspect in providing care, instruction, or treatment. Inefficacy is a reduced feeling of accomplishment in one's professional life or the feeling of incompetence.

Current research shows that worldwide 35-45% of nurses are experiencing burnout (Dyrbye et al., 2019). Burnout prevalence among newly licensed nurses is even higher, reported between 48.9-66% (Dyrbye et al., 2019). Burnout in healthcare practitioners (HCPs) affects the safety of patients and the quality of care provided. High levels of emotional exhaustion, high depersonalization, and low personal accomplishment have been associated with poor quality of care (Dall'Ora et al., 2020). Burnout leads to a lower adherence to infection control measures, which increases hospital acquired infection rates (Cimiotti et al., 2012). The nursing shortage is a concern worldwide and burnout leads to an increase in turnover and to an increased intention to leave the profession (Van der Heijden et al., 2019). Finally, burnout is associated with a decrease in the health and well-being of HCPs (Heinemann & Heinemann, 2017). There are detrimental

1

effects of burnout on the health and well-being of HCPs including an increase in drug and alcohol use, an increase in psychological ailments, and an increase in psychological complaints (Guest et al., 2011).

The consequences of burnout include lower quality of patient care and increased turnover rates (Dall'Ora et al., 2020). Lower quality of patient care, high infection rates, and an increase in nurse turnover will lead to severe economic issues (Cimiotti et al., 2012; Dwyer et al., 2019; Muic and Kelm-Malpass, 2020). The incremental cost of burnout versus non-burnout attributed turnover for one RN can average $8,872 (Muic & Kelm-Malpass, 2020).

HCPs with a high prevalence of burnout are more likely to use alcohol and illicit drugs as a coping mechanism (Van Gerven et al., 2016). HCPs who suffer from burnout are also more likely to suffer from anxiety, depression, and physiological issues such as low back pain, cardiovascular disease, and musculoskeletal issues (Heinemann & Heinemann, 2017). Psychological ailments may lead a HCP to use maladaptive coping techniques such as alcohol consumption or the use of hypnotic medications (Guest et al., 2011). These effects of burnout compound the prior issues mentioned. A workforce with greater psychological ailments or physiological injuries will increase patient safety concerns as well as lead to a greater nursing shortage.

Patient Safety and Quality of Care

HCPs who score high in burnout measures are more likely to also score high in self-reported errors (Dall'Ora et al., 2020). Patient safety is a major concern of healthcare organizations worldwide. Prior to the COVID-19 pandemic, medical error was the third leading cause of death in the United States (Makary & Daniel, 2016). Worldwide, as many as 40% of

patients are harmed in primary and outpatient healthcare, with 80% of these errors found to be preventable (WHO, 2019). Burnout leads to missed care with an increase in self-reported errors, and a higher level of infections. HCPs who are experiencing burnout are more likely to self-report errors such as a medication error or a lapse in following infection prevention protocols (Montgomery et al., 2020; Sulaiman et al., 2017). The current nursing shortage has led to higher safety errors and an increase in patient deaths. Nursing shortages and nurse staffing issues lead to higher rates of burnout, which in turn cause safety errors and a lower quality of patient care (Aiken et al., 2002; Frith et al., 2010; Toh et al., 2012).

Burnout is also correlated to adverse events. When nurses report high levels of emotional exhaustion, they are less likely to report a near miss or an adverse event (Liu et al., 2018). High burnout scores predicted medication errors in nurses in Thailand (Nantsupawat et al., 2016). Van Bogaert et al. (2014) used cross-sectional survey with a sample of 1,108 nurses assigned to 96 nursing units. Results found that Depersonalization was significantly related to nurse perceived quality of care ($r = -0.290$, $p < 0.01$).

Hospitals with a higher prevalence of burnout among nurses are more likely to have higher rates of infection. Nearly 7 million hospitalized patients will acquire an infection while being treated for another condition (Cimiotti et al., 2012). Nurse burnout increases the risk of urinary tract infections (UTIs), surgical site infections (SSIs), gastrointestinal infections, and pneumonia (Cimiotti et al., 2012; McHugh et al., 2011). Nurse burnout is highly associated with an increase in infections, with each 10% increase in a hospital's composition of nurses with high levels of burnout leads to an increase of one UTI and two SSIs per 1,000 patients (McHugh et al., 2011). A secondary data analysis from a 2006 survey of 7,076 registered nurses in

Pennsylvania found that nurse burnout was significantly associated with UTIs (B = 0.85, p = 0.02) and SSIs (B = 1.58, p < 0.01). The authors used data from the Center for Disease Control to estimate that a 30% reduction in burnout would lead to an annual cost savings of up to $68 million (Cimiotti et al., 2012). Patient infection rates cost hospital organizations a significant amount of money. Nurse burnout is related to an increase in patient infection rates.

Burnout among HCPs leads to a lower quality of care by increasing infection rates and decreasing quality while increasing cost of care. HCPs who suffer from burnout are more likely to report safety errors and medication errors and report a lower quality of care provided to patients that caused patient harm.

The Nursing Shortage

An increase in nurse burnout is associated with a decrease in the nursing workforce (Van der Heijden et al., 2019). The nursing shortage has been a concern in the United States for the past decade. The Bureau of Labor Statistics' Employment Projections projects the need for an additional 203,700 new nurses each year through 2026 to fill newly created positions and to replace the high number of projected retiring nurses (Bureau of Labor Statistics, U.S. Department of Labor, 2022). Estimates of turnover costs range from $82,000 to $88,000 per nurse (Dwyer et al., 2019). High burnout levels are associated with intention to leave the profession (Dall'Ora et al., 2020; Dwyer et al.,2019; Van der Heijden et al., 2019). A longitudinal study (Van der Heijden et al., 2019) of registered nurses found that higher burnout levels led to a higher level of turnover intention (r = 0.85, p < 0.05). When factoring in recruitment, training, and orientation, a single nurse leaving their job within the first year of practice can cost an institution up to three times the nurse's annual salary (Unruh & Zhang,

2014). Burnout is significantly related to an increase in nurse turnover which impacts the current nursing shortage.

Burnout levels are also associated with absenteeism (Dall'Ora et al. A, 2020). A literature review (Dall'Ora et al., 2020) found four studies that considered sickness absences. Emotional exhaustion was associated with short-term sickness absence (i.e., 1-10 days of absence) (Firth & Britton, 1989). Emotional exhaustion was also significantly associated with mental health absenteeism (Parker & Kulik, 1995).

In summary, there is an association between burnout and intention to leave the profession. The potential losses in practicing nurses caused by burnout are concerning. Higher numbers of burnout and higher numbers of turnover intention were found within newly licensed nurses (Dwyer et al., 2019; Dyrbye et al., 2019). The current nursing shortage has been shown to increase safety errors and an increase in patient deaths. Increasing a nurse's workload by one patient increases both UTIs and SSIs (Ciomatti et al., 2012). Nursing shortages and nurse staffing issues have led to higher rates of burnout, which in turn caused safety errors and patient deaths (Aiken et al., 2002; Frith et al., 2010; Toh et al., 2012).

Decrease in the Health and Well-Being of Healthcare Practitioners

Burnout is associated with negative health outcomes for HCPs such as alcohol and illicit drug use, physiological ailments, and psychological distress (Guest et al., 2011; Jackson et al., 2016). These negative health outcomes compound the prior issue of a nursing shortage.

Healthcare practitioner burnout is associated with an increase in alcohol use or dependence. A cross-sectional survey (Jackson et al., 2016) of 4,402 medical students in the United States found that burnout is strongly related to alcohol use or dependence (OR1.20; 95%

CI 1.05–1.37; P < 0.01). A cross-sectional survey (Van Gerven et al., 2016) of 5,799 nurses and physicians working in Belgium investigated the prevalence of HCPs relationship of involvement with problematic medication use, excessive alcohol consumption, and risk of burnout. A patient safety incident was twice as likely to occur with a high risk of burnout. Harm to the patient was also a positive predictor of problematic medication use. HCPs that were involved in a PSI were 1.5 times more likely to engage in problematic medication use.

Nurse burnout is linked to an increase in physiological ailments. Heinemann and Heinemann (2017) completed a literature review using 1,225 scientific publications on burnout syndrome. The data identified that burnout affects certain physiological processes of the body including: an increase in cortisol levels, changes in metabolic processes, and changes in the immune system or brain activity. Burnout has detrimental effects on HCPs' ability to perform patient care. A workforce that is experiencing physiological ailments is more likely to increase absenteeism (Dall'Ora et al., 2020). Absenteeism, and physiological ailments compound the already increasing nursing shortage.

Nurse burnout is also linked to an increase in psychological ailments such as depression or anxiety. Ramirez-Baena et al. (2019) used a cross-sectional survey of 301 nurses in eight different hospitals across Spain to estimate the prevalence of burnout and anxiety. Forty percent of the nurses presented high levels of burnout. Anxiety and depression were highly correlated with high levels of burnout (r = 0.514 and r= 0.572 respectively). A cross-sectional survey (Khamisa et al., 2015) including 895 nurses from four hospitals in South Africa, revealed that somatic symptoms, social dysfunction, and severe depressive symptoms, explained 7%, 11%,

and 5% variance related to staff issues such as security risks in the workplace, job satisfaction, and health of nurses.

Psychological ailments may lead a healthcare worker to use maladaptive coping techniques such as alcohol consumption or the use of hypnotic medications (Jackson et al., 2016). A workforce with greater psychological ailments or physiological injuries will increase patient safety concerns as well as lead to a greater nursing shortage.

Summary

Burnout among HCPs leads to a lower quality of patient care, increased turnover intentions, and adverse physiological and psychological issues in HCPs (Cimiotti et al., 2012; Dall'Ora et al., 2020; Dwyer et al., 2019; Khamisa et al., 2015; Montgomery et al., 2020; Van der Heijden et al., 2019; Van Gerven et al., 2016; White et al., 2019). Burnout has been the focus of research for over 30 years, yet burnout continues to be a worldwide problem (Woo et al., 2020). There is a growing body of research exploring burnout at a system or unit-based, level. This research has focused on the structural unit-based factors that correlate with the development of burnout. Some research has found organizational factors to be a greater predictor of burnout than individual factors. Burnout research has yet to fully explore interpersonal and relational factors that may have an effect on the development of burnout.

Social Support

Social support is defined as the perception and actuality that one is cared for, that one has assistance available from other people, and that one is part of a social network (House, 1981). There are four types of social support: instrumental, informational, appraisal, and emotional social support (House, 1981; Krause, 1987; Weinert, 1987). Nursing research has found a

negative association between social support factors and the development of burnout (Dall'Ora et al., 2020; Lowe et al., 2020). Empirical evidence about the association between burnout and social support have used cross-sectional, descriptive, survey methods. The definition of social support varies widely based on the tool used. The four types of social support are not always examined. Social support is frequently cited as a dimension of social capital (Bourdieu, 1986; Nahapiet & Ghoshal, 1998). According to Bourdieu social capital is an actual or potential resource that can be accessed by an individual within a group (1986).

Educators, medical residents, and other helping professionals such as social workers also have a high prevalence of burnout (Frajerman et al., 2019; Garcia-Carmona et al., 2018; Maslach & Leiter, 2016; Sanchez-Moreno et al., 2015). Research in education has associated structural social support with burnout (Meredith et al., 2020). Educational research has found evidence that interpersonal relationships have an effect on the contagiousness of burnout (Meredith et al., 2020). Maslach theorized that burnout is the result of a prolonged mismatch between an individual and one of the six characteristics of work (Maslach, 1998). The mismatch in community would lead an individual to perceive a lower level of social support (Maslach, 1998).

Social Capital

Social capital has been defined in the following way:

> Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to membership in a group—which provides each of its members with the backing of the collectively owned capital, a 'credential' which entitles them to credit, in the various senses of the word (Bourdieu, 1986, p. 249).

The most widely accepted framework for social capital explains the distinction between three different types of social capital: structural, cognitive, and relational (Claridge, 2018). Structural social capital is defined as "the overall pattern of connections between actors—that is, who you reach and how you reach them" (Nahapiet & Ghoshal, 1998, p. 244). The cognitive dimension "refers to those resources providing shared representations, interpretations, and systems of meaning among parties" (Nahapiet & Ghoshal, 1998, p. 244). And finally relational capital is "intangible since it is what and how people think and feel" (Claridge, 2018, p. 1).

Network analysis methods have been used to analyze the social network degree, social network centrality and the development of burnout in medical residents (Shapiro et al., 2015). Network analysis methods have also examined the communication of interprofessional teams of healthcare professionals (Shoham & Messer, 2017). Research describing nurses has focused on the perceived organizational or coworker social support, but not from a network analysis method (Lowe et al., 2020). Nursing research has also focused on the mediating effect of self-efficacy on quality of care, missed care, and burnout (Chen et al., 2019). Nursing research has examined the relationship between social capital and burnout (Farahbod et al., 2015; Kowalski et al., 2010). This research has used a cross-sectional, descriptive survey method using a variety of tools to measure aspects of social capital. This methodology does not use a network analysis method and use of these tools does not answer relationships specifically associated with aspects of structural social capital. Use of a network analysis method to assess structural social capital would give information regarding nurses' access to people and resources and their capability for resource exchange to examine a unit level of social capital (Claridge, 2018).

Collective Efficacy

Bandura (1986) defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (p. 391). Self-efficacy is about the perception of the individual to produce a specific level of performance. However, nurses do not work alone. Individual nurse's self-efficacy may be impacted by the ability of the interprofessional team to complete a goal. Nursing research has focused on the concept of self-efficacy there has been less empirical research completed on how outcomes are affected by perceived group success and failure. Collective efficacy is defined as the perception that individuals hold concerning the ability of their group to successfully complete organizational tasks (Riggs & Knight, 1994). Bandura's (1977) theory provides a framework for expecting group-level experiences to have an impact on individual-level outcomes. Collective efficacy is associated with increased group motivation and performance (Prussia & Kinicki, 1996) that may buffer stressor-strain relations and affect the development of burnout.

Educational research has recently focused on the concept of collective efficacy (Donohoo, 2018). Collective efficacy is related to an increase in student achievements, and an increase in goal attainment (Donohoo, 2018). Collective efficacy is related to a lower development of burnout in educators (Avanzi et al., 2015; Skaalvik & Skaalvik, 2007). Collective efficacy in nurses is associated with a decrease in missed care (Smith et al., 2018). To date nursing research has not looked at the relationships between burnout and collective efficacy in nurses.

Purpose of the Study

The purpose of this study is to better understand whether collective efficacy, and the

nurses' social network have a relationship to the development of burnout in nurses. Collective efficacy and the social network may be a resource to mitigate the development of burnout in nurses. Therefore, this study aims to examine the effects of collective efficacy, and the nurses' social network on burnout. Gathering information on these factors may contribute to decreasing nurse burnout within the United States. This in turn, may explain how interpersonal, and interprofessional, relationships are a resource that can mitigate the development of burnout. Such information can allow managers, and organizations, to develop potential strategies to reduce nurse burnout and improve patient care outcomes. The results from this study expands existing knowledge of burnout and its predictors at the unit level. This has the potential to guide the development of interventions that can improve social support and increase collective efficacy of nurses at the unit level.

Research Aim and Sub Aims

Aim: Describe the relationships that exist between burnout, collective efficacy, and interprofessional providers' social networks. The following sub aims will be addressed:

Sub aim 1: Describe burnout at the unit level.

Sub aim 2: Describe collective efficacy at the unit level.

Sub aim 3: Describe the unit network of social supports (Instrumental support, Emotional support, Informational support, Advice-seeking support).

Sub aim 4: Describe to what degree does the instrumental support account for interprofessional burnout.

Sub aim 5: Describe to what degree does emotional support account for interprofessional provider burnout.

Sub aim 6: Describe to what degree does informational support account for interprofessional provider burnout.

Sub aim 7: Describe to what degree does advice seeking support account for interprofessional provider burnout.

Sub aim 8: Describe to what degree does collective efficacy account for interprofessional provider burnout.

Sub aim 9: Describe to what degree do collective efficacy and the social support(s) predict burnout.

CHAPTER TWO

LITERATURE REVIEW

This chapter will present a description of burnout as defined in the literature. Maslach's (1998) Multidimensional Theory of burnout will be presented, which provides the theoretical framework for this study. A description of other commonly used theories applied to study burnout will be presented. Descriptions of self-efficacy, collective efficacy, social support, and social network will be presented along with the philosophical grounding of these theories. Tools commonly used to measure burnout will be presented. This chapter will also present a synthesis of current research related to burnout in nurses, as well as the current gaps in the literature.

Conceptual Model

Definition of Burnout

According to Schaufeli and Enzmann (1998, p. 3), the term burnout was first applied to professionals by Herbert Freudenberger in his 1974 paper entitled 'Staff burn-out' which describes the syndrome through his many observations of committed and idealistic volunteers that worked with young drug addicts: Eventually over time many volunteers experienced an "energy depletion and loss of motivation and commitment, which was accompanied by a wide array of mental and physical symptoms" (Schaufeli & Enzmann, 1998, p. 3). Since his initial use of the term burnout to describe professionals, many different definitions of burnout have emerged in the literature. One literature review found at least 142 different definitions (Rotenstein et al., 2018).

The definition used most frequently in the literature originates from Dr. Christina

Maslach. Maslach and Jackson initially defined burnout as a "syndrome of emotional exhaustion

and cynicism that occurs frequently among individuals who do 'people-work' of some kind"

(Maslach & Jackson, 1981, p. 99). This definition has evolved over time. Maslach and Leiter

(1997) further defined burnout:

> Burnout is the index of the dislocation between what people are and what they have to
> do. It represents an erosion in value, dignity, spirit, and will—an erosion of the human
> soul. It is a malady that spreads gradually and continuously over time, putting people into
> a downward spiral from which it's hard to recover (Maslach & Leiter, 1997, p. 17).

In 2003 Maslach captured burnout using slightly different terms. The original three dimensions

of Emotional Exhaustion, Detachment, and Personal Accomplishment were updated to

Exhaustion (the individual stress response), Cynicism (the negative reaction to others and the

job), and Inefficacy (the negative evaluation of one's own accomplishments) in order to

encompass all professionals and not just those in the helping professions (Maslach, 2003). The

Maslach definition most frequently used today first appeared in 2017:

> Burnout is a psychological syndrome emerging as a prolonged response to chronic
> interpersonal stressors on the job. The three key dimensions of this response are an
> overwhelming exhaustion, feelings of cynicism and detachment from the job, and a sense
> of ineffectiveness and lack of accomplishment (Maslach, 2017, p. 103).

In 2019 the World Health Organization released a definition of burnout, which closely

aligns with Maslach's definition. The ICD-11 code is QD85, and the description by the WHO is

the following:

> Burn-out is a syndrome conceptualized as resulting from chronic workplace stress that
> has not been successfully managed. It is characterized by three dimensions: 1) feelings of
> energy depletion or exhaustion; 2) increased mental distance from one's job, or feelings
> of negativism or cynicism related to one's job; and 3) a sense of ineffectiveness and lack
> of accomplishment. Burn-out refers specifically to phenomena in the occupational

context and should not be applied to describe experiences in other areas of life. (WHO, 2019, para. 1)

The conceptual definition of burnout for this study is drawn from Maslach and Leiter (2016): *a psychological syndrome emerging as a prolonged response to chronic interpersonal organizational stress*. The core categories of cynicism, exhaustion, and inefficacy differentiate burnout from other related terms. Related terms include depression and compassion fatigue. Depression is different from burnout in that depression is a context-free and it extends beyond the workplace, whereas burnout relates specifically to a job or place within the organization and well-being (Bakker et al., 2008). Compassion fatigue "is the physical, emotional, and spiritual result of chronic self-sacrifice and/or prolonged exposure to difficult situations that renders a person unable to love, nurture, care for, or empathize with another's suffering" (Harris & Quinn Griffin, 2014, p. 82). This term is related to burnout and its attribute of exhaustion but differs because it does not account for the attribute of inefficacy. In addition, the antecedents of these two terms are also different. Burnout is the result of chronic workplace stressors, whereas compassion fatigue is the result of chronic exposure to difficult situations or suffering. Many articles use these terms interchangeably however it is important to note their differences in attributes and antecedents.

Burnout Theories Used in Research

Various theories have been used to conceptualize burnout. Most models describe a relationship where certain factors over time cause an individual to experience burnout. In the following section three theories used predominantly in the literature will be discussed. The

concepts, definitions, and overall theories will be described. Finally, Maslach's

Multidimensional Theory of Burnout (1998), used to guide this study, will be described.

Siegrist's Effort-Reward Imbalance Model

Siegrist's Effort-Reward Imbalance (ERI) Model (1996) is used in research to assess

adverse health effects related to prolonged organizational stress (Figure 1). The focus of this

model is on occupational life and the reciprocity of exchange. This theory presents burnout as the

end result of a prolonged imbalance between efforts and rewards. Using this theory, high-

effort/low-reward conditions are considered stressful, and these conditions lead to vital

exhaustion and burnout. The following will describe each concept of the theory and how they

relate, followed by its application to studying burnout.

Figure 1. Siegrist's Effort-Reward Imbalance Model (1996)
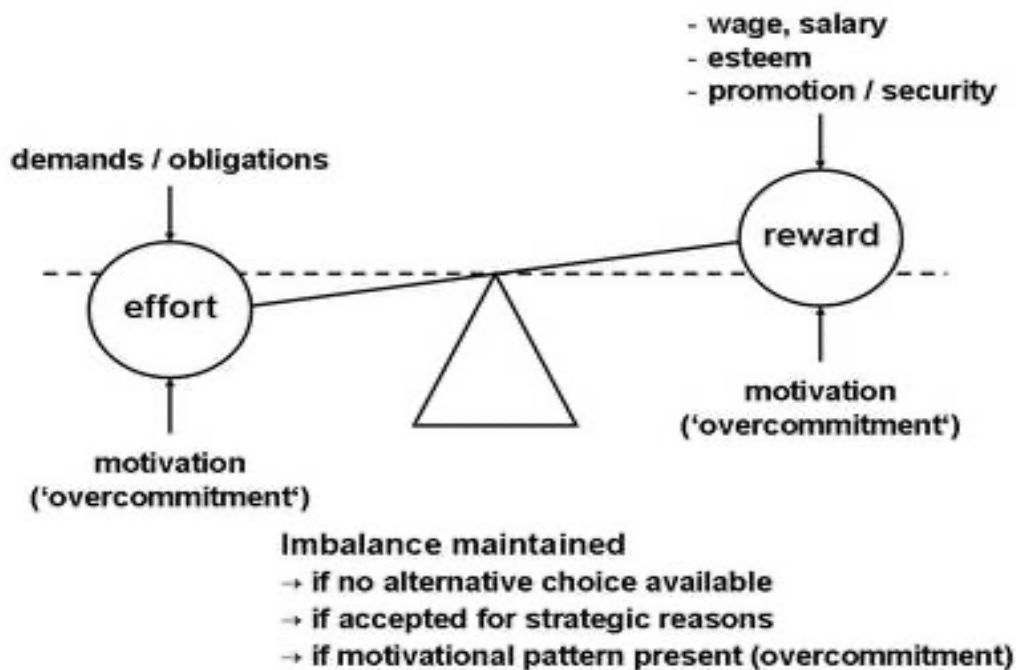
This theory describes that a chronic imbalance between (high) efforts and (low) rewards will lead to strain (psychological symptoms or physical health problems) (van Vegchel et al., 2005). The major concepts in the model are (1) effort, (2) reward, (3) over-commitment. and (4) strain. A mismatch between high efforts and low rewards will lead to adverse effects. If an individual perceives that they are exerting high effort with low reward, then they will experience negative emotions and a sustained stress response. The inverse is also assumed to be true. That an individual who perceives that their efforts are met with appropriate rewards will feel an increase in health, well-being, and positive emotions.

Effort. The concept of effort can be defined as either intrinsic (demands) or extrinsic (obligations) that are imposed on the employee. This relates to the antecedent of burnout in the concept of chronic workplace stressors. The ERI model is concerned with occupational related efforts and the concept of burnout takes place within the workplace as a result of chronic stress (Maslach & Leiter, 2016).

Rewards. The concept of rewards can also be intrinsic (esteem, recognition) or extrinsic (job promotion/security, wage or salary). Societal rewards are defined as either money, esteem or status control (Siegrist, 1996). The concept of rewards is related to the concept of personal accomplishment within burnout. The end result of burnout will lead to an individual having a low sense of personal accomplishment. The concept of personal accomplishment is an intrinsic reward (esteem, feeling of worth, feeling of making a difference) or extrinsic rewards (job promotion, status, or an increase in wages) (Maslach, 2017).

Over-commitment. Over-commitment is defined as being involved with work all the time. The concept of over-commitment considers the individual's personality. This concept adds

the idea that the perception of the individual will influence the employer's health directly.

Burnout research has found a strong positive correlation between certain personality types (Type

D, Neuroticism) and burnout (De la Fuente-Solana et al., 2017). The concept of over-

commitment is related to individual personality types and their known correlation to burnout.

Strain. Strain is a state of "active distress" by evoking strong negative emotions, which

in turn active autonomic arousal and associated strain reactions. In the long run, this can lead to

the development of physical (e.g., cardiovascular) or mental (eg. depression) disease. Strain has

been associated with the idea of vital exhaustion. According to Siegrist et al. (1996) a prolonged

imbalance between high effort and low reward may lead to a state of "active distress" of the

body. This may eventually lead to negative emotions and activate the sympathetic-

adrenomedullary and the pituitary-adrenal-cortical system (van Vegchel et al., 2005). The

concept of strain is related to the consequence of exhaustion in burnout. The end result of

burnout is exhaustion, cynicism or detachment. These consequences of burnout have correlations

to psychological or physiological negative effects on the individual (Maslach, 2017).

The following three assumptions are derived from the ERI model:

1. The extrinsic ERI hypothesis: high efforts in combination with low rewards increase the risk of poor health.

2. The intrinsic overcommitment hypothesis: a high level of overcommitment may increase the risk of poor health.

3. The interaction hypothesis: employees reporting an extrinsic ERI and a high level of overcommitment have an even higher risk of poor health (van Vegchel et al., 2005).

The ERI model is gaining popularity as the theoretical framework used in current burnout research. The model has been applied to healthcare professionals and nursing, in particular (Bakker et al., 2008). One of the central concepts of the ERI model is strain. Strain is related to the concept of burnout and the aspect of exhaustion. Exhaustion is the end result of burnout, and strain is the end result of a prolonged imbalance between effort and reward. The model more recently has been applied to a wide range of health outcomes including, burnout, musculoskeletal pain, psychosomatic health symptoms, and behavioral outcomes (Stanhope, 2017). Despite criticism that the theory has been mainly applied to cardiovascular research, the theory's application has been applied to nurse burnout (Colindres et al., 2018).

The ERI model builds on the view that burnout is a result of an imbalance or mismatch (Maslach, 1998). The end result of an imbalance between perceived efforts or rewards is strain. Certain personalities, individual demographics, or coping mechanisms may lead an individual to feel less effort, greater reward, or lower over-commitment. These individual characteristics will affect the professional's risk of developing burnout. For example, at the unit level a nurse might have an increased effort of a greater patient load, or less quality sleep due to working night shifts. A nurse might perceive less rewards through a lack of promotion, a lack of increase in wages, or a lack of specialty education on the unit. The organization could decrease efforts on the individual through policies mandating maximum nurse/patient ratios. The organization could increase perceived rewards through recognition, increasing salary, or increasing self-esteem. The ERI model expands on one of the six dimensions of work, reward (Maslach & Leiter, 1997).

Jobs Demands Resources

The JD-R model (Bakker & Demerouti, 2007) (Figure 2) is an organizational stress

theory that describes the end result of burnout as the result of prolonged job stress. The

phenomenon that the JD-R model describes is that risk factors associated with job stress are

classified into two categories (i.e., job demands and job resources) (Bakker & Demerouti, 2007).

The model may be applied to various occupations regardless of the specific demands and

resources. Another assumption of the theory is that engagement is the opposite of strain (Llorens

et al., 2006). This theory is used widely in burnout research. Researchers have applied the JD-R

model to burnout among healthcare professionals. The following will describe each concept of

the theory and how they relate, followed by its application to studying burnout.

Figure 2. Bakker & Demerouti's Jobs Demands Resources Model (2007, p. 313)
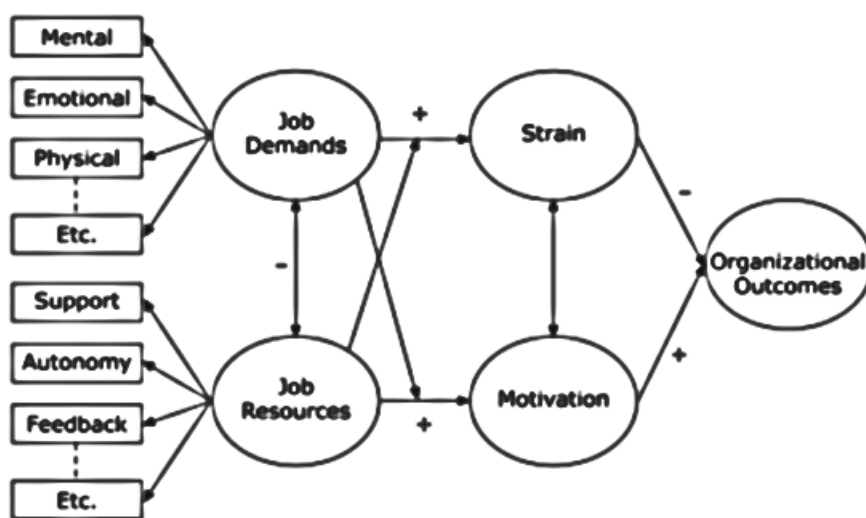
Central Tenet and Concepts of the Theory

The central tenet of this theory is that greater levels of occupational stress are felt by

employees if job demands are high, and resources are low. The major concepts of the theory are

job demands, job resources, strain, motivation, and organizational outcomes (Bakker &

Demerouti, 2007).

Job demands. Job demands "refer to those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs" (Bakker & Demerouti, 2007, p. 312). Job demands are not necessarily negative, but they may evolve into a job stressor if resources are not available. The antecedents of burnout are typically classified as situational factors (work overload, job autonomy) and individual factors (neuroticism, self-efficacy). Job demands is related to burnout and the antecedents of work overload. Job demands have been found to be an important predictor of burnout (Bakker et al., 2014).

Job resources. Job resources, "refer to those physical, psychological, social, or organizational aspects of the job that are either/or: Functional in achieving work goals. Reduce job demands and the associated physiological and psychological costs. Stimulate personal growth, learning, and development" (Bakker & Demerouti, 2007, p. 312). Job resources is related to one consequence of burnout, cynicism. Job resources have a consistent negative relationship to burnout, when employees have insufficient opportunities for development, or cannot work on a variety of tasks, they report higher levels of cynicism (Bakker et al., 2014). Job resources could prevent the development of negative attitudes that would then mitigate the development of burnout (Bakker et al., 2014).

Strain. Strain has been defined as health impairment and burnout (Llorens et al., 2006). The health impairment process is when an employee experiences chronic job demands that in turn have depleted the employee's resources and may thus lead to burnout or deterioration of health (Llorens et al., 2006).

Motivation. Motivation, or the motivation process, is where the employee shows work engagement and positive work outcomes such as a high level of performance and an organizational commitment (Llorens et al., 2006). A crucial outcome is job performance. Inefficacy is one of the consequences of burnout. Inefficacy is the opposite of motivation. Engaged employees perform better than non-engaged employees (Bakker, 2009).

The concepts are related in that if job demands are high and resources are low, employees are more likely to experience strain and low motivation resulting in low organizational outcomes. The end result of sustained high demands with low resources will lead to strain, low motivation, and has shown in research to be associated with a high risk of burnout. A high number of job resources can offset a high number of demands. The end result of sustained high demands with low resources will lead to strain, low motivation, and has shown in research to be associated with a high risk of burnout.

The JD-R model has been used widely in burnout research and is still being applied to current burnout research. The model applies to burnout in that the end result of chronic high job demands with low resources leads to the health impairment process which includes strain, burnout, and physiological impairments. Job demands have been identified as one of the causes of burnout, the end result being poor performance and poor health (Bakker & Demerouti, 2007). The JD-R model aligns with Maslach's Multidimensional Theory of Burnout by aligning with the idea that burnout is related to a mismatch between an individual and their work life (Maslach, 2017). This theory views burnout as the end result, a process, of a prolonged imbalance.

Maslach's Multidimensional Theory of Burnout

Maslach's Multidimensional Theory of Burnout (1998) is the first theory to describe burnout and define the three core components of burnout: Emotional Exhaustion, Depersonalization, and Personal Achievement. The theory is important because it led to the most widely used definition of burnout and the creation of the Maslach Burnout Inventory (MBI), the tool most often used in burnout research (Maslach, 2006). The theory is an organizational stress theory that addresses the gap of how employees in "helper professions" (i.e., nursing, firefighters, police) deal with chaos or crisis situations (Maslach, 1998). This theory emerged at the same time that the MBI was developed (Maslach, 1998). Employees working in "helping professions" were interviewed and several key themes emerged (Maslach, 1998). The Maslach Burnout Inventory (MBI) and Maslach's Multidimensional Theory of Burnout emerged from the same set of interviews (Maslach, 2017). The central tenet of the theory is that the cause of exhaustion is prolonged stress that originates from the workplace. Prolonged organizational stress will cause an individual to experience emotional exhaustion first, followed by depersonalization and a reduced sense of personal accomplishment. The end result of the prolonged stress is burnout. The multidimensional theory of burnout uses three concepts: emotional exhaustion, depersonalization, and reduced personal accomplishments (Maslach, 1998). Each of these concepts will be described below. The Maslach (2017) updated version will be used in this study (Figure 3).

Figure 3. Maslach's Multidimensional Theory of Burnout (1998; Updated 2017)
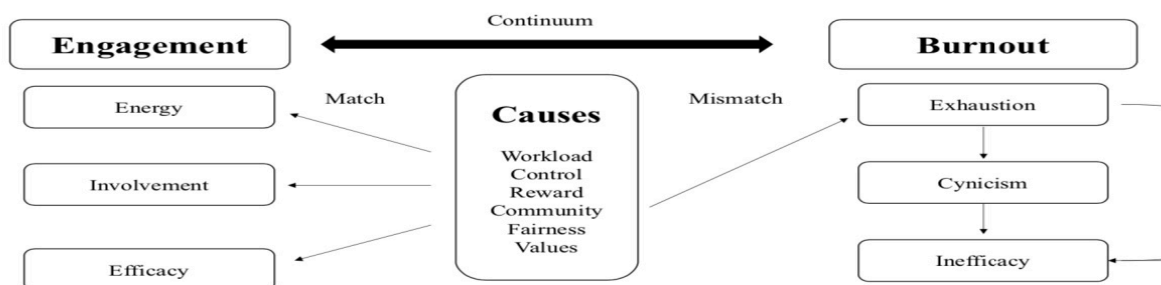
Note: Derived from Maslach (2017).

Concepts of the Theory

Exhaustion. Exhaustion is defined as feelings of being emotionally overextended and a depletion of one's emotional resources. (Maslach, 1998). Emotional depletion is considered one of the major consequences of burnout. This component of burnout represents the individual stress dimension of burnout (Maslach, 1998).

Cynicism. "Depersonalization refers to a negative, callous, or excessively detached response to other people, who are usually the recipients of one's service or care" (Maslach, 1998, p. 69). Depersonalization is how participants often cope with work stress. Cynicism is defined as negative attitudes towards clients, loss of viewing the client as an individual (Maslach, 2017). Depersonalization and cynicism are one of the consequences and the end result of burnout. This component of burnout represents the interpersonal dimension of burnout (Maslach, 1998).

Inefficacy. Inefficacy is defined as a reduced productivity, low morale, and an inability to cope (Maslach, 2017). This component is meant to represent the self-evaluation dimension of burnout (Maslach, 1998). The feeling of low personal accomplishment, or the feeling of

inefficacy is conceptually related to Bandura's (1977, 1986) phenomena of self-efficacy (Maslach, 1998). This study will explore the concept of efficacy at the unit level.

The theory states that first the professional will experience exhaustion. Following exhaustion, the individual will experience cynicism and inefficacy (Maslach, 1998). It is unclear after the development of exhaustion if cynicism and then inefficacy develop in a linear way or simultaneously.

Causes of Burnout

Six mismatches between people and their jobs that can cause burnout: work overload, lack of control, insufficient reward, breakdown in community, absence of fairness, and conflicting values (Dall'Ora et al., 2020). The greater the mismatch between the six areas of work characteristics and an individual, the greater the risk for burnout (Maslach, 1998). When the six areas match the individual, then the individual will be engaged.

Workload. Work overload, or a workload mismatch, occurs when the job demands exceed an individual's limits (Maslach, 1998). If overload is a chronic occupational condition with little opportunity to rest, recover, or restore balance, burnout may occur (Maslach, 1998).

Control. Lack of control occurs when an individual has little control over the work they do (Maslach, 1998). This may be because of constraint within the organizational environment such as policies, monitoring, or job conditions (Maslach, 1998). This chronic lack of ability to problem solve, make choices, or have input into the outcomes that they will be held accountable for may lead to burnout (Maslach, 1998).

Reward. Insufficient rewards involve a lack of recognition for the work people do. This lack of recognition devalues the work and the worker and may involve internal rewards (pride)

or external rewards (e.g., salary and benefits) and this critical mismatch may lead to burnout (Maslach, 1998).

Community. A breakdown of community occurs when people perceive a loss of a sense of positive connection with others in the workplace (Maslach, 1998). Maslach states that unresolved conflict is the factor most deleterious for community and can lead to negative feelings of frustration and hostility, thereby reducing the likelihood of social support (Maslach, 1998). This study will explore community as it applies to the unit level of burnout.

Fairness. A mismatch in fairness is when there is a lack of system of justice and fair procedures that would maintain respect within the workplace (Maslach, 1998). There may be a perception in inequity of pay, or workload, or if evaluations or promotions are handled inappropriately (Maslach, 1998).

Values. Value conflict is felt when there is a mismatch between the requirements of the job and the individual's personal principles (Maslach, 1998). An individual might feel constrained by the job and feel they must perform actions that are unethical or not in accord with their personal values (Maslach, 1998).

The six types of mismatches are not totally independent but can be interrelated and none of the individual mismatches are thought to be more important than the rest to the development of burnout (Maslach, 1998). The six types of mismatches are an important aspect of the theoretical framework because it assumes the effect of the organizational context on the individual causes burnout, instead of burnout being only an individual problem (Maslach, 1998). The feelings of burnout are gradual and compounded over time. Eventually the individual will

experience exhaustion that will lead to feelings of cynicism and eventually a loss of productivity (Maslach, 1998).

The second framework for conceptualizing key factors associated with burnout is a continuum, where burnout is at one end in the relationship people establish with their job, contrasted with engagement at the other end (Maslach, 1998). Engagement is defined in terms of the same three dimensions as burnout (exhaustion, cynicism, inefficacy), but seen in their positive opposites of these three negatives (Maslach, 1998). The engaged individual thus has high energy, involvement, and a sense of efficacy (Leiter & Maslach, 1988). The assumption of this model is that if the individual has a match between themselves and the six areas of worklife, they will be engaged.

The Multidimensional Theory of Burnout is not cited as the theoretical framework in most research. However, the theory is responsible for the definition of burnout most often found in research. The MBI was created from the same interviews of professionals that led to the creation of the theory. The MBI is the tool most often used in research, being used in almost 90% of studies (Maslach, 2017). The theory should be noted for its importance in the creation of the definition of burnout and burnout tools.

All three of these models are rooted in organizational stress theory. All three of these theories explain burnout as the result of an imbalance. Maslach's Multidimensional Theory of Burnout describes the individual's reaction to chronic organizational stress and the end result of burnout within the individual worker. The ERI Model and the JD-R Model both discuss how the individual is affected by an imbalance felt in how they interact with the environment at work. This imbalance can be caused by organizational or personal characteristics, or from intrinsic or

extrinsic efforts or demands. The theories state the end result of the imbalance using different terms (burnout, strain, occupational stress and occupational performance). All three of the theories are concerned about the psychological and physiological effects of long-term organizational stress.

Theoretical Model

Maslach's (2017) Multidimensional Theory of Burnout will be used as the theoretical framework to guide this study. This model was developed to conceptualize the relationships of the three key dimensions of the stress response: overwhelming exhaustion, feelings of cynicism and detachment from the job, and a sense of low personal achievement or ineffectiveness. This theory examines causal relationships between these three key dimensions that lead to the end result of burnout. The significance of this model is that it places the individual stress cycle within a context of the organizational environment and within a social context (Maslach, 2017). Determining the extent to which community factors play a role in nurses' development of burnout will require examining the nurses' social network. The six areas of worklife are a resource that a nurse may use to decrease burnout (Maslach, 1998). The causes of burnout, the six areas of worklife, occur at the individual, interpersonal, and community level. Current burnout research has focused on the antecedents and consequences of burnout at the individual level. Nahapiet & Ghoshal's (1998) Theory of Social Capital and Bandura's (1977) Theory of Self-Efficacy will further inform Maslach's concepts of community and inefficacy at a unit level in the research study.

Social Capital Theory

Social capital theory provides better understanding of the concept of communitydescribed in Maslach's theory at an aggregate level. For this study the unit level will be assessed whereas Maslach's theory applies to the individual level. The concept of community from Maslach's theory will be explored at a unit level in terms of structural social capital and the social network. Nahapiet & Ghoshal's (1998) theory of social capital provides further insight into Maslach's concept of community in its definition of social capital and in its definition of several foundational concepts, including "*Structural Social Capital*" and "*Social Network*" (see Figure 4).

Figure 4. Nahapiet & Ghoshal's Theory of Social Capital (1998)
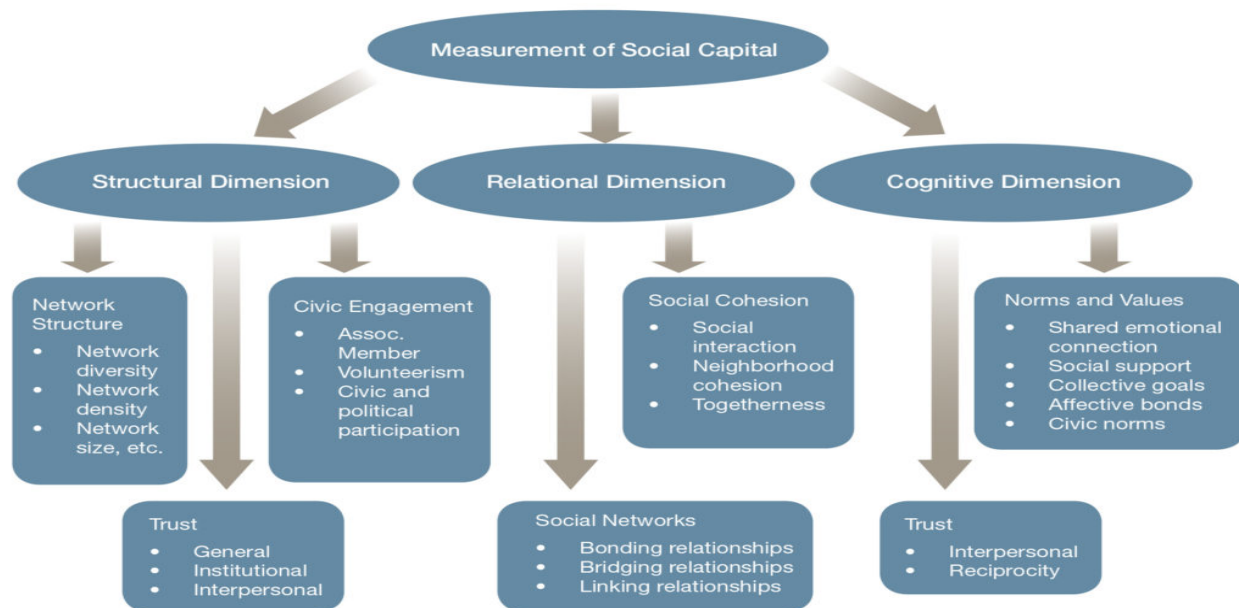
Structural social capital. Structural social capital can act as a resource for nurses. Nahapiet and Ghoshal define structural social capital as the connections between people or units (1998, p. 244). The concept of structural social capital includes the social structure of the

network, the network ties and configurations, and the rules, roles, and procedures of individuals within the network (Nahapiet & Ghoshal, 1998). Social capital exists due to someone's position within the social network (Burt, 2004).

Social network. Social network is defined as "a network of individuals (such as friends, acquaintances, and coworkers) connected by interpersonal relationships" (Merriam-Webster, 2021).

- Social network has also been defined as who knows whom, or who talks to whom, within a group or organization (Valente, 2010).

- Structural social capital and the social network are related to the concept of burnout from Maslach's six areas of worklife, specifically the area of community.

The area of community is about the individual's perception of positive connections with their colleagues and managers, a reduced sense of community reduces the perception of social support (Maslach, 1998).

Social support. The current study will categorize social support type as developed by House (1981). Social support categories will provide a better understanding of the concept of community described in Maslach (1998). Maslach (1998) theorizes that a mismatch between and individual and community will lead to a perception of a lack of social support.

Emotional support. This type of support consists of feelings of trust and love.

Instrumental support. This type of support consists of resources such as spending time with someone or providing them with materials or money.

Informational support. This type of support consists of providing an individual with information or advice.

Appraisal support. This type of support consists of providing evaluative feedback to others.

Collective Efficacy Theory

The concept of inefficacy from Maslach's theory will be explored at a unit-based level using the concept of collective efficacy. Maslach (1998) bases this concept on Bandura's Theory of Self-Efficacy (1977). Bandura's (1977) Theory of Self-Efficacy further informs the concept of inefficacy and collective efficacy in its definitions of self-efficacy and in its definition of the foundational concept of "*Collective Efficacy.*"

Figure 5. Bandura's Theory of Self-Efficacy (1977)
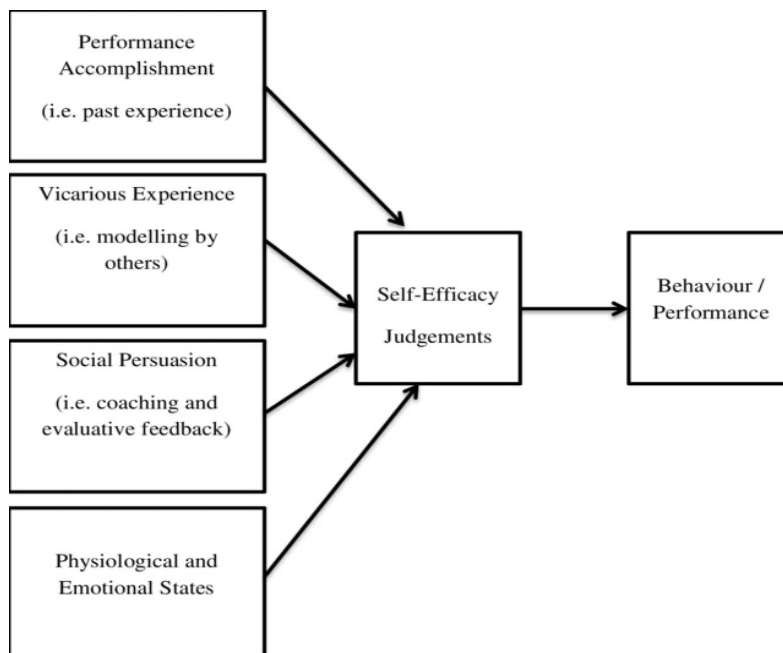
Self-Efficacy

The term self-efficacy was first used by Bandura in the 1970s. His definition is "how well one can execute courses of action required to deal with prospective situations" (Bandura, 1977, p. 122). Self-efficacy is an individual's belief in their ability to succeed in a situation. Self-efficacy is how well an individual believes they can complete a task. Self-efficacy develops by an individual interpreting information from four main sources of information.

Mastery Experiences (Performance Outcomes)

This is the individual's interpretation of one's previous performance. This refers to the experiences gained when an individual takes on a new challenge and is successful in their outcome (Bandura, 1977). Failure of a task will undermine the feeling of self-efficacy if the failure occurs before a sense of efficacy is established (Bandura, 1977).

Vicarious Experiences (Social Role Models)

The next important source of self-efficacy comes from experiences provided by social models. Bandura (1977, p. 124) states that "[s]eeing people similar to oneself succeed by sustained effort raises observers' beliefs that they too possess the capabilities to master comparable activities to succeed." If an individual has positive role models in their life, they are more likely to absorb positive beliefs about themselves.

Social Persuasion

When an individual receives positive feedback, while they are completing a task, they are more likely to believe that they hold the skills and capabilities to succeed (Bandura, 1977).

Emotional and Physiological States

The emotional, physical, and psychological status of an individual can influence how

they feel about their abilities to succeed. It is more difficult for an individual struggling with depression or anxiety to build self-efficacy (Bandura, 1977). If an individual is able to better manage anxiety and enhance their mood when dealing with a challenging situation, they are able to increase their perception of self-efficacy (Bandura, 1977).

Collective Efficacy

Bandura defines *collective efficacy* as "a group's shared belief in its conjoint capability to organize and execute the courses of action required to produce given levels of attainment" (Bandura, 1997, p. 477). Where self-efficacy is about the individual's perception of their own personal ability to complete a task, collective efficacy is about the ability of the group to meet outcomes. In schools, when educators believe in their ability as a group to influence student outcomes, higher levels of academic achievement occur (Bandura, 1993). Collective efficacy in nursing has been associated with better patient outcomes (Smith et al., 2018).

Using knowledge gained about the relationship between burnout, collective efficacy, and nurses' social network can better serve our healthcare system by helping to decrease the development of burnout to increase patient outcomes, decrease nursing turnover, and decreasing adverse effects of health of nurses.

Measurements

The majority of burnout research uses one of the following four tools to measure burnout: The Maslach Burnout Inventory (MBI), The Copenhagen Burnout Inventory (CBI), the Effort-Reward Imbalance Questionnaire (ERI), and the Oldenburg Burnout Inventory (OLBI). The next section will explore the purpose, aim, development, validity, and reliability of the tools used to measure burnout, which are summarized below in Table 1. Of these four tools, the MBI has been

used most frequently, cited in nearly 90% of burnout research (Dall'Ora et al., 2020; Wheeler et al., 2011).

Table 1. Psychometric Properties of Tools

Tool	Number of Questions	Subscales	Reliability		Validity	References
OLBI	16 (USA version)	Exhaustion: 8 items	Internal consistency EE: 0.88		EFA: two-factor solution	Bakker & Demerouti, 2007
		Disengagement (from work): 8 items	Disengagement: 0.78		CFA: two-factor solution	Reis et al., 2015
CBI	19	Physical and Psychological fatigue: 6 items	Internal Consistency Physical and Psychological fatigue: 0.87		CFA: three-factor solution	Kristensen et al., 2005 Thrush et al., 2020
		Physical and psychological fatigue related to work: 7 items	Physical and psychological fatigue related to work: 0.87			
		Client related burnout: 6 items	Client related burnout: 0.85			
MBI	22	Emotional Exhaustion: 9 items	Internal consistency	Test Re-test	EFA: two-factor solution	Maslach & Jackson, 1981 Wheeler et al., 2011
		Detachment: 5 items	EE: 0.86 D: 0.72 PA: 0.74	EE: 0.80 D: 0.64 PA: 0.60	CFA: three-factor solution	
		Personal Accomplishment: 8 items				

The Oldenburg Burnout Inventory (OLBI)

According to Demerouti et al. (2003), the Oldenburg Burnout Inventory (OLBI) was developed in 1998 (originally written in German and translated into English at a later date) to address a different view from the MBI on how burnout should be operationalized using only two concepts related to burnout, exhaustion, and disengagement. The USA version of the OLBI is a 16-item scale with two subscales (exhaustion and disengagement from work), and each subscale contains eight items (Bakker & Demerouti, 2007). The participants will rate the frequency of experiencing feelings related to each subscale using a Likert-type, 4-point scale with the following verbal anchors: 1 = strongly agree, 4 = strongly disagree. Each subscale is reported as a separate score and a full-scale total is also reported. Cut-off scores for the full-scale result are suggested by the author (Bakker & Demerouti, 2007).

The OLBI includes positively and negatively framed items to address two core dimensions of burnout: exhaustion and disengagement (Bakker & Demerouti, 2007). Exhaustion is defined as "a consequence of intense physical, affective and cognitive strain, i.e., as a long-term consequence of exposure to certain job demands" and disengagement (from work) is defined as "distancing oneself from one's work in general, work object and work content" (Bakker & Demerouti, 2007, p. 5). This scale does not measure professional efficacy or personal achievement because the authors consider these a consequence of burnout and not a core dimension (Bakker & Demerouti, 2007).

Psychometric properties. The OLBI has high reliability and validity (Table 1).

Reliability. The internal consistency of the English version used with an American sample of the exhaustion subscale ranges from a = 0.74 to a = 0.87 (Halbesleben & Demerouti,

2005). The reliability of the disengagement subscale ranges from a = 0.73 to a = 0.85

(Halbesleben & Demerouti, 2005; Reis et al., 2015). These levels are high enough to be

considered acceptable for use (Trochim et al., 2016).

Validity. A two-factor scale has been confirmed in studies conducted in Germany, the

United States, and Greece (Bakker & Demerouti, 2007). Results from these studies demonstrate

a goodness of fit for the two-factor scale.

Studies have demonstrated convergent validity of the OLBI among American working

adults and a sample of fire department employees (Halbesleben & Demerouti, 2005). Convergent

validity has also been found in the United States and Greece (Bakker & Demerouti, 2007).

The OLBI differs from other burnout tools in that both positively and negatively worded

items are used. The tool is meant to be used for any worker and does not have a different version

to be used for healthcare workers (Bakker & Demerouti, 2007). The tool shows acceptable levels

of internal reliability with CFA confirming the use of a two-factor scale. The OLBI has been

used in over 100 studies measuring burnout, but most studies using the OLBI are not conducted

in the United States.

The Copenhagen Burnout Inventory (CBI)

The Copenhagen Burnout Inventory (CBI) was developed following a five-year

prospective study of employees working in the human service sector (Kristensen et al., 2005).

This study from Denmark was completed in the response to the large number of long-term

sickness leave and early retirement among human service workers (Kristensen et al., 2005). The

CBI is a 19-item instrument that measures the concept of burnout on a 5-point ordinal scale of

frequency experiencing feelings of burnout (Always or to a very high degree, Often or to a high

degree, Sometimes or somewhat, Seldom or to a low degree). Three subscales are used to operationalize burnout: physical and psychological fatigue (6 items), physical and psychological fatigue related to work (7 items), and client related burnout (6 items). One total score is reported out of a score of 100%. A low risk of burnout is a score between 0-25%, medium risk is a score between 25-50%, and high risk over 50%. The tool was originally created in Danish but has been translated into English. The tool is being used in a number of countries and has been translated into eight languages (Kristensen et al., 2005).

In the CBI burnout is measured using one dimension, burnout. The tool uses the definition of burnout from Schaufeli and Greenglass (2001), "a state of physical, emotional and mental exhaustion that results from long-term involvement in work situations that are emotionally demanding" (Schaufeli & Greenglass, 2001, p. 501). This tool differs from the MBI in that it views burnout as one dimension, exhaustion, and then differentiates between three different types of exhaustion (personal, work-related, and client-related). Personal burnout is defined as "the degree of physical and psychological fatigue and exhaustion experienced by the person"; work-related burnout is defined as "the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his/her work"; and client-related burnout is defined as "the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his/her work with clients" (Kristensen et al., 2005, p. 197).

Psychometric properties. The CBI shows high reliability and validity. The psychometric properties of the CBI can be found in Table 1.

Reliability. The Danish version of the CBI has high internal consistency. All three of the subscales reach an alpha coefficient above 0.80. The scale has a high internal reliability with low

non-response rates (Kristensen et al., 2005). The CBI has not been widely used in research in the United States. In 2020 (Thrush et al., 2020) a secondary analysis of the English version of the CBI data from 1,679 academic health center employees in the United States was assessed for reliability, confirmatory factor validity, and discriminant validity. Cronbach's alpha for the survey was high at 0.946. Each subscale was also high (personal burnout 0.892, work burnout 0.896, and patient/client burnout 0.897). The internal reliability has been reported above 0.80 in different languages as well (Fong et al., 2014; Mahmoudi et al., 2017; Schmitt, 2011; Sestili et al., 2018). Item-level reliability analyses indicated importance of all items of the scale (Thrush et al., 2020).

Validity. A confirmatory factor analysis found a goodness of fit for the three-factor model as originally proposed by the CBI developers (Thrush et al., 2020).

Discriminant validity and construct validity were also found for the English version of the CBI (Thrush et al., 2020). The CBI was tested against a subset of meaningful work items and found adequate discriminant validity (Thrush et al., 2020).

The CBI has been used in a number of countries but has yet to be used widely in United States based research (Thrush et al., 2020). The testing of the CBI within healthcare professionals in the United States has only been done on a small sample and at one site using a secondary data analysis. The results cannot be considered generalizable to a larger population and further testing of the psychometric properties should be completed on U.S. samples. The tool shows high levels of internal reliability and validity and should be considered for further use in U.S. based research.

The Effort-Reward Imbalance Questionnaire (ERI)

The ERI was created by Johannes Siegrist in order to operationalize the Effort-Reward Imbalance theory (Siegrist et al., 2014). The ERI is a standardized self-report measure that consists of three subscales (effort, reward, and overcommitment). There are two version of the ERI questionnaire: the long version, which consists of 22 items, or the short version with 16 items. Both scales use a Likert scale with the following verbal anchors: (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree. In the original long version, the effort scale contains 6 items, the reward scale contains 10 items, and the overcommitment scale contains 6 items.

The questionnaire was developed using the theoretical foundations from the Effort-Reward Imbalance theory. The subscales are defined in the same way that the theory defines the concepts. The lower the score in each subscale the fewer the rewards, demands or overcommitment is received/perceived by the person. A single final score is reported, the ER-ratio. The ER-ratio is computed by placed the effort score in the enumerator and the reward score in the denominator. For ER = 1, the person reports one effort for one reward. For ER greater than 1, the person reports more efforts for each reward, and for ER less than 1, the person reports more efforts for each reward (Siegrist et al., 2014).

Psychometric testing. The ER-I has high reliability and validity as shown in Table 1.

Reliability. Research documents a satisfactory internal consistency of Cronbach's alpha with each subscale above 0.70. Exploratory and confirmatory factor analysis confirm a three-factor solution with a good model fit for each scale (Siegrist et al., 2014).

Validity. Convergent validity of the ER-I has been found when tested against the scales of the JD-R model (Siegrist et al., 2014). Discriminant validity has been confirmed in significant

differences of mean scores of efforts, reward, and overcommitment according to age, gender, and socio-economic status (Siegrist et al., 2014).

Over 50 studies have used the ER-I questionnaire to study burnout, but most of the research was not conducted in the United States.

Maslach Burnout Inventory (MBI)

The Maslach Burnout Inventory (MBI) measures the three core components of burnout: Emotional Exhaustion (EE), Depersonalization (DP), and Personal Achievement (PA). It is estimated that the MBI is used in 88% of research involving burnout (Boudreau et al., 2015). It is based on the Maslach (1998) Multidimensional Theory of Burnout. The MBI is a 22-item instrument that measures the concept of burnout on a 7-point ordinal scale of frequency experiencing burnout: Never, A few times a year or less, Once a month or less, A few times a month, Once a week, A few times a week, and Every day. There are three subscales: emotional exhaustion (9 items), depersonalization (5 items), and personal accomplishment (8 items). One score is reported for each subscale. Results are meant to be compared to averages and cut off scores published in the literature that allow the respondent to self-reflect about their risk of burnout (Maslach, 2017). The MBI is considered a self-reflection tool, where the participant should use their score to reflect on if and how they are experiencing burnout (Maslach, 2017). The personal accomplishment scale is positively worded where a low score rather than a high score is indicative for burnout.

There are five versions of the Maslach Burnout Inventory. The MBI Human Services Survey (MBI-HSS) is the original form and the most widely used form of the MBI scale. This version was designed to assess professionals in the human services. It can be used for nurses,

physicians, health aids, social workers, correctional officers, clergy, and other fields focused on helping people (www.mindgarden.com). The original MBI was created in English and has since been translated into multiple languages. English versions of the tool produce statistically significant higher internal consistency estimates than other translations (Wheeler et al., 2011). Researchers have critiqued the translation of the MBI into Asian languages since some items cross load onto different subscales (Wheeler et al., 2011).

Psychometric properties. The MBI consistently shows high reliability and validity in use for measuring burnout. The psychometric properties of the MBI can be found in Table 1.

Reliability. Wheeler et al. (2011) completed a meta-analysis of the coefficient alpha for the MBI. The meta-analysis reviewed 221 studies and after critical review included 84 studies. Results showed a high level of internal consistency for all three subscales with the mean alpha estimates falling within the 0.70 and 0.80 range. Scale variance and language/translation issues accounted for most of the variance in the coefficient alphas. The Emotional Exhaustion (EE) scale consistently demonstrated high internal consistency. Of the studies reviewed, 98% contained a Cronbach's alpha above 0.80 for the EE scale. The mean alpha for the EE subscale was 0.87 (Wheeler et al., 2011). The other two subscales have less consistent internal consistency. Initial internal consistency coefficients of 0.77 and 0.74, respectively, for the DP and PA subscales were reported (Maslach & Jackson, 1981). The DP subscale mean alpha values were 0.71, 0.74 and 0.72, the PA subscale were 0.76, 0.78, and 0.78 (Wheeler et al., 2011). Measures above 0.80 are considered excellent, measures below 0.50 are unacceptable, measures above 0.70 are acceptable for use in research (Hulley et al., 2013). Time stability has also been tested using a test re-test of the MBI. Participants were evaluated use a test re-test method

separated by an interval of 2-4 weeks found reliability coefficients for the subscales as follows 0.82 (EE), 0.80 (DP), and 0.60 (PA) (Maslach & Jackson, 1981).

There are no data using interrater methods for the MBI. This is acceptable considering burnout is a personal syndrome where another individual may not be able to diagnose burnout in a participant. The MBI is meant to be a self-reflection tool where the participant can self-identify burnout risk.

Validity. Factoral validity has been tested by researchers using the MBI. The original three-factor structure of the MBI is the most frequently used form of the scale. However, research have presented evidence for two, four, or five factor scales (Worley et al., 2008). A meta-analysis containing 45 studies was completed and the results support the use of the original three-factor scale (Worley et al., 2008). In a meta-analysis (Worley et al., 2008) 18 of the 21 studies showed a three-factor solution. The meta-analysis results showed that there is concern in the three subscales being entirely independent of each other. The three factors were found to be related in different ways. The findings of this meta-analysis suggest that there is something more complex happening with burnout than a three-factor solution (Worley et al., 2008).

Maslach and Jackson (1981) reported convergence validity in several ways. First, an individual's MBI scores were correlated with behavioral ratings made independently by a person who knew the individual well (i.e., one's spouse or co-workers). Second, MBI scores were correlated with the presence of certain job characteristics that were expected to contribute to experienced burnout. Third, MBI scores were correlated with measures of various outcomes that had been hypothesized to be related to burnout. Discriminant validity was also measured by distinguishing the MBI from other measures that might be confounded with burnout. The scores

from the MBI were compared to scores in the Job Dissatisfaction Scale and the Social

Desirability Scale. The results supported discriminant validity for the MBI scale (Maslach &

Jackson, 1981).

The Maslach Burnout Inventory is the most widely used tool to measure the concept of

burnout (Maslach, 2017). It is estimated that the MBI is used in 88% of research related to

burnout (Boudreau et al., 2015). There are significant issues found in the use of the MBI in

languages other than English. Many items cross-load on factors. Many researchers cite cut-off

scores used to place burnout risk in low, medium, or high-risk categories (Dall'Ora et al., 2020;

Wheeler et al., 2011). Maslach does not recommend using the tool with established cut-off

scores and researchers should consider if it is being used appropriately in current research and

true to its original form and intent (Maslach & Leiter, 2016). Overall, the Maslach Burnout

Inventory should be used with caution in new research. The development and initial use of the

scale was support, but over time the scale may need significant adjustments in order to account

for the multifaceted and complicated concept of burnout. Many researchers reported only the

exhaustion scale of burnout. The MBI follows Maslach's Multidimensional Theory of Burnout

where Exhaustion is the first to develop in burnout. Research has confirmed that the EE scale has

the highest validity and reliability of the three scales which is consistent with the theoretical

framework (Wheeler et al., 2011). Workers who are at high risk for developing burnout will first

score high in the EE scale prior to the two scales (DP and PA) showing high risk.

Summary

The MBI, CBI, OLBI, and the ER-I questionnaires all have strong psychometric

properties. The tools differ in their conceptual and operational definitions of burnout. The MBI

uses three subscales to measure burnout, which aligns with the conceptual definitions used in Maslach's Multidimensional Theory of Burnout.

Review of Literature

Search Strategy

A literature review was conducted to analyze burnout in nursing. The search for current, 2015-2020, peer-reviewed articles was conducted via the Loyola University online library. These databases included the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and PubMed. Articles used for the purposes of this paper were limited to English only and published within the last five years. Additional articles were obtained from the reference lists of articles and reviewed for possible inclusion (Figure 6).

Figure 6. Preferred Reporting Items for Systematic Reviews and Meta-Analyses

Identification	CINAHL (n = 130)	PubMed (n = 294)
Screening	Records after duplicates removed (n = 379)	Duplicates removed (n = 28)
	Records screened (= 213)	
Eligibility	Full-text articles assessed for eligibility (n = 185)	Full-text articles excluded, with reasons (n = 90)
Included	Studies included in qualitative synthesis (n = 95)	

Note: Adapted from Moher et al., 2009.

The literature revealed that burnout research fell into three categories: what is known about the individual, what is known about the unit, and what is known about the organization. In this section a synthesized review of what is known in the literature will be presented.

The Individual Level

The majority of burnout research has focused on the individual. Numerous researchers have assessed the correlation between different demographics and the risk for burnout. Researchers have also assessed the correlation between personality types and the development of burnout, or an individual's coping style and the risk of burnout. The individual's perception of social support, either from colleagues or from a manager, has a significant correlation to the development of burnout. Perceived efforts, and job demands, have been associated with either the development or the mitigation of burnout. Current researchers have attempted to modify the individual's coping style or coping strategy in order to reduce high levels of burnout.

Demographics

There is sufficient evidence that different demographics are at a greater risk for burnout (Cañadas-De la Fuente et al., 2015; Dyrbye et al., 2019; Johnson-Coyle et al., 2016; Padilla Fortunatti & Palmeiro-Silva, 2017). A meta-analysis of 78 studies (Cañadas-De la Fuente et al., 2018a) was conducted to assess the impact of sociodemographic variables in nursing professionals and the relationship to burnout syndrome. A weak relationship was found between depersonalization and gender ($r = 0.078$), marital status ($r = 0.047$), and children ($r = 0.048$). The correlations between these variables are low and do not provide a strong level of evidence.

Two recent studies have demonstrated statistically significant results on the positive correlation between age and burnout (Dyrbye et al., 2019; Johnson-Coyle et al., 2016). Dyrbye et

al. (2019) used a cross-sectional survey method to evaluate characteristics associated with

burnout among nurses and compare those results to other American workers. This study used

survey data from 7,077 nurses and 5,198 workers collected using a random sample from

members of the American Nurses Association (ANA) and a probability-based sample of

American workers from the general population using the Knowledge-Panel. Burnout was

measured using the Maslach Burnout Inventory (MBI). This study used multivariable analysis to

identify factors independently associated with burnout. In the multivariable analysis, age (for

each year older, OR: 0.98, 95% CI: 0.98-0.99, $p < 0.0001$) was found to be a statistically

significant independent predictor of burnout. Padilla Fortunatti and Palmeiro-Silva (2017) used a

cross-sectional survey method with a convenience sampling of 36 registered nurses and 46 nurse

aides working in the Intensive Care Unit (ICU). Their results suggest that age is negatively

correlated with emotional exhaustion (age = -0.39) as well as depersonalization (age = -0.23).

This study used the MBI to measure burnout, and the ERI questionnaire to measure Effort-

Reward Imbalance. Johnson-Coyle et al. (2016), also found a statistically significant ($p = 0.02$)

negative correlation was found in the 51-65-year age group implying less burnout in this

demographic. The relationships between age and burnout are weak. In summary, there is mixed

evidence that age is significantly correlated with burnout.

Gender

Numerous studies demonstrate that men and women scored statistically different in the

three subscales of the MBI (Dyrbye et al., 2019; Johnson-Coyle et al., 2016; Woo et al., 2020).

Cañadas-De la Fuente et al. (2015) used a cross-sectional study to estimate the prevalence of

burnout and to propose a risk profile for this syndrome among nurses. This study included 676

nursing professionals in Andalusia, Spain. A higher level of DP was observed in men ($p < 0.001$, M= 7.69; SD = 5.71). Men are more likely to score higher in the DP subscale, while women are more likely to score high in the EE subscale (Cañadas-De la Fuente et al., 2015). In summary, there are differences in the subscale scores between men and female HCPs when using the MBI. Further research is needed to explore the differences in the way men and women experience burnout.

Personality

Current research supports a strong predictability of burnout associated with certain personality types. Neuroticism, Type A, and ruminating personality types have a strong positive correlation to burnout (Ahmadpanah et al., 2015; Andriaenssens et al., 2015; Barr, 2018; Bianchi, 2018; Qiao et al., 2016). Neuroticism "is characterized by a tendency to negatively interpret events and show negative emotions such as anxiety, depression, and frustration" (Cañadas-De la Fuente et al., 2015, p. 242). Individuals with this type of personality tend to use coping strategies such as rumination, distraction or avoidance. In Cañadas-De la Fuente et al. (2015), a cross-sectional study 39% of the variance in burnout was explained by neuroticism with a moderate correlation ($r = 0.58$, $p < 0.001$). There is evidence that there is a higher association of burnout with personality factors than with organizational factors. There is evidence that nurses with a neurotic personality type are more likely to score high on burnout measures. A significant portion of research has focused on the correlations between personality types and burnout, with significant evidence concluding the strong relationship that exists between a neurotic personality type and a high risk for burnout.

Coping Style

Research supports a correlation between specific coping styles and the risk for burnout. Coping strategies are used when an individual meets a stressful situation that has exceeded their individual resources (Lazarus & Folkman, 1984). There are two types of coping strategies used to cope with stress: direct or action-focused coping and indirect or emotion-centered coping (Lazarus & Folkman, 1984). Action-focused coping, or active problem focused coping, is when an individual focuses on modifying the source of stress and solving the problem and emotion focused coping, or avoidant coping, is when an individual avoids the problem by engaging in other distracting activities (Lazarus & Folkman, 1984). Adriaenssens et al. (2015) performed a systematic review of 17 studies to identify specific determinants of burnout within emergency room nurses. Coping strategies were predictive of burnout. Active problem focused coping was related to lower levels of exhaustion and depersonalization and to higher levels of personal accomplishment. Mefoh et al. (2019) used a cross-sectional survey method of 283 nurses to examine the association between age and the three burnout dimensions depend on the extent of nursing professionals' use of emotion-focused coping strategy. Emotion focused coping was positively associated with EE (ß = 0.32, p = 0.008), for every single unit rise in emotion-focused coping EE increased by 0.32. Portero de la Cruz et al. (2020) used a cross-sectional, descriptive, multi-center study of 171 nurses in Spain to assess burnout, perceived stress, job satisfaction, coping and general health levels experienced by nurses working in the emergency department. The researchers used multivariate liner regression models and results indicated that the use of avoidant coping (p = 0.03), anxiety (p = 0.02), social dysfunction (p = 0.02), and being female (p= 0.01) were statistically significant predictors of EE. Qiao et al. (2016) assessed the factors

associated with burnout of HIV/AIDS healthcare workers among 501 healthcare workers in China. Using a bivariate logistic model, the possibility of having burnout was significantly higher in healthcare workers who used negative coping styles frequently (OR = 1.059, 95% CI 1.003–1.118). Rodríguez-Rey et al. (2019) assessed 298 Pediatric Intensive Care (PICU) staff (177 nurses) to predict burnout from resilience and coping styles. A frequent usage of emotion-focused coping style predicted 30% of the variance in burnout and Post Traumatic Syndrome Disorder. In summary, there is consistency across cultures that an avoidant, emotion-focused or ruminating coping style is strongly correlated to the development of burnout.

Spiritual Well-Being

An individual's spiritual well-being may decrease the risk of developing burnout. Kim and Yeom (2018) examined the relationship between spiritual well-being and burnout of ICU nurses. This cross-sectional descriptive study used a sample of 318 ICU nurses. Burnout was negatively correlated with spiritual well-being (r = -0.48, p < 0.001). Rushton et al. (2015) found that spiritual well-being reduced emotional exhaustion, depersonalization, were related to an increase in personal accomplishment. These results suggest that organizations should attempt to increase the spiritual well-being of their nurses and provide a positive spiritual climate. Spiritual well-being and spiritual beliefs may assist positive coping behaviors in nurses working in end-of-life care (Günüşen et al., 2018).

Level of Education

There are mixed results regarding the relationship between burnout and the nurse's level of education. Some research has found a positive correlation between holding a higher degree and higher score in the Emotional Exhaustion subscale of the MBI (Abedi-Gilavandi et al., 2019;

Boerner et al., 2017; Kim & Yeom, 2018). Other researchers have found a negative correlation between level of education among nurses (a bachelor's degree, or a master's degree in nursing) and burnout. Nursalam et al. (2020) used a descriptive analytic with cross-sectional approach to analyze the association between organizational commitment, personal factors and burnout syndrome to turnover intention in 83 nurses in Indonesia. The results showed education had a strong negative relationship with the development of burnout (OR = -1.817, 95% CI: -3.396, -0.239, p = 0.024). Dyrbye et al. (2019) performed a cross-sectional analysis of 8,638 nurses and 5,198 workers and found that workers with a higher academic degree had lower prevalence rates of burnout (Associate degree, 42%; Baccalaureate degree in nursing, 44.2%; Master of Science in Nursing, 32.1%; Doctor of Nursing Practice, 31.5%).

There is a small body of evidence that specialty education, regarding the unit or specific type of patient the nurse works with, for nurses may provide protection from burnout. A 2018 study (Frey et al., 2018) explored potential protective factors for palliative care nurses in New Zealand. The cross-sectional study revealed that nurses who had previous palliative care education recorded significantly higher mean scores for compassion satisfaction (x = 40.79, SD = 4.60) and significantly lower mean scores for burnout (x = 22.58, SD = 4.73) and secondary traumatic stress (x = 21.35, SD = 4.85).

The research exploring any correlation between educational level and burnout have been inconsistent. In the United States there is some evidence that nurses with a higher education level have a higher prevalence of burnout. However, in other countries, nurses with a higher education level have a lower prevalence of burnout. This suggests that specialty education may be a resource nurses use to manage stress or feel that they have a lower perceived effort in caring for

patients if they have received specialty education. There is empirical evidence that specialty education, specific to the population or unit that the nurse works on, has an inverse relationship to the development of burnout. In the United States an increase in education level, may also increase the amounts of demands placed on a nurse, thereby leading to the development of burnout.

Years in Practice

The relationship between years in practice and the dimensions of burnout also varies. Research has shown that individuals earlier in their career are more likely to score high in exhaustion and depersonalization, but nurses later in their career score lower in personal accomplishment (Abdo et al., 2015; Adriaenssens et al., 2015; Laschinger et al., 2015; Portero de la Cruz et al., 2020; Yao et al., 2018). These results suggest that nurses earlier in their career burn out, while nurses who practice longer than four years may have feelings of lower personal accomplishment because of not being promoted, getting a raise, or receiving a higher degree. Dorneles (2020) used a cross-sectional study of 167 military nurses to analyze the association between burnout and sociodemographic and occupational features. Burnout was significantly related to time of practice in military nursing. Nurses who had been practicing in a military setting for greater than four years were more likely to score high on burnout measures (AdjPR3= 1.208, CI = 1.113–1.310, $p < 0.0001$). Swamy et al. (2020) had similar results with critical care nurses working within the Veterans Health Administration (VA). VA tenure of any length between 1-20 years was associated with an increased risk of burnout. The highest risk was found among nurses who had been working for the VA for 5-10 years. These nurses were twice as likely to experience burnout than other groups (OR 2.11; 95% CI, 1.44–3.1). There is evidence

that nurses are more likely to burnout earlier in their profession but score lower in personal achievement measures later in their careers. There are variables that may affect the relationships between years of practice and burnout scores, and dimensions of burnout that the individual cannot control such as the environment, intrinsic or extrinsic rewards.

Increased Demands or Increased Efforts

Numerous studies have indicated that burnout is significantly and positively correlated with nurses' perceptions of increased job demands or increased efforts (Chowdhury, 2018; Guo et al., 2019; Neumann et al., 2018; Robins et al., 2018). A meta-analysis by Pérez-Francisco et al. (2020) reviewed 45 articles written in Spanish, English, or Portuguese. The main objective of this review was to identify the relationships between overload and burnout among nurses. The authors found support that a relationship exists between an increase in work overload and burnout in nursing. Multiple limitations were discussed including the varied use of the MBI. Studies are not in agreement about the number of items used in the tool, consistent cut-off scores, and a high degree of variability in the interpretation of the scores (total burnout score versus subscale scores). Further research is needed to increase validity and reliability of the relationships between job demands, overload, a lack of resources and the development of burnout.

The JD-R model has been used to determine that an increase in job demands and a decrease in resources affects nurse burnout and nurse turnover. Van der Heijden et al. (2019) used a longitudinal study with 1,187 nurses in the Netherlands to assess the effects of job demands and resources on nurses' burnout and turnover intention. The results indicated that an increased perceived stress level resulted in higher burnout scores. Quantitative demands

(physical, emotional demands and family-work conflict) were assessed using the Copenhagen Psychosocial Questionnaire. Burnout was assessed using the Copenhagen Burnout Inventory. Chi-squared goodness of fit tests were used to test the Jobs-Demands Resources Model. Results indicated that nurses reported higher level of emotional job demands rather than high levels of physical demands. The indirect effect of emotional demands, through perceived effort and burnout, on turnover intention was significant at 0.02 ($p < 0.05$). These results suggest that a perceived increase in effort and emotional demands increases the risk for burnout and turnover intention.

The Effort-Reward Imbalance theory has been applied to nurse burnout. Colindres et al. (2018) used a cross-sectional survey design to examine the association between effort-reward imbalance, burnout, and adherence to infection control measures. This study used convenience sampling with a population of 333 nurses in four Ecuadorian hospitals. The ERI questionnaire and the Copenhagen Burnout Inventory (CBI) were used to measure the two variables. The CBI uses seven items that measure exhaustion related to the work environment. A single burnout score is reported with a score over 50 classifying the individual as exposed to burnout. The mean ERI and burnout scores for this population fell below the thresholds indicating imbalance and burnout. 35.8% of the nurses were above the burnout limit, with 20.4% experiencing a negative ERI. ERI was statistically significant to predict levels of burnout ($p < 0.01$) after controlling for nursing role and perceived risk.

Prior research suggests a relationship between an increase in efforts, or demands, and the development of burnout. An increase in efforts or demands may increase stress thereby

exacerbating the development of burnout. If an individual perceives extrinsic or intrinsic rewards, or a lower effort is needed, burnout may be buffered.

Electronic Health Records

Recent studies have investigated the association between health information technology (HIT), such as electronic health records (EHR) and healthcare professionals. A majority of the research has focused on physicians with very few researchers using a population of nurses. Harris et al. (2018) investigated the correlation between EHR and burnout among advanced practice nurses (APRNs). A cross-sectional survey method using electronic surveys was used with 371 participants. Of the participants 19.8% reported at least one symptom of burnout, with 50.3% agreeing or strongly agreeing that the EHR increased their daily workload and frustrations. Burnout was measured using a single question from the Physician Work Life Study. Bivariable chi-square and Fisher's exact tests were used to measure associations between burnout and EHR use, and EHR-related stress. Following multivariable logistic regression EHR remained significantly associated with burnout (Odds Ratio = 2.17, 95%CI: 1.02-4.65). The use of an EHR may increase the perception of effort or demand on healthcare providers, thereby leading to a higher risk of burnout.

Use of an electronic health record (EHR) has been named as one of the top three reasons for burnout among physicians (Fred & Scheid, 2018). In Harris et al. (2018) 50.3% of advanced practice nurses (APRNs) agreed that the EHR added to their daily frustration. Robinson and Kersey (2018) used a quality improvement project to attempt to reduce stressors linked to physician burnout. A three-day intensive training including 3,500 physicians was used to attempt to improve user ability and clinical accuracy of documentation. Following the training 85-95% of

physicians stated that the education helped them to improve the quality, readability, and clinical accuracy of their documentation. Seventy-five percent of the subjects reported an estimated savings of 4-5 minutes or more each hour due to more efficient documentation. This quality improvement project is a Level 5 level of evidence, the lowest level of evidence. Higher quality research is needed to show how education or more efficient use of an EHR, or technology in general, may reduce risk of burnout. The American Nurses Association (ANA) is beginning to recognize the frustration and stress of using technology or EHR, and that this stress may increase the risk of burnout (Tawfik et al., 2017). Workflow optimization and a perceived decreased workload may decrease the risk of burnout (Zindel et al., 2019).

Social Support

Nurses who perceive strong social support from coworkers are less likely to experience burnout (Dall'Ora et al., 2020; Lowe et al., 2020; Van der Heijn et al., 2019; Weigl et al., 2016). The importance of supervisor and/or coworker support may vary for different groups. The results from Van der Heijn et al. (2019) suggest that workers under 40 determine meaning of work by developmental opportunities, social support from supervisor and social support from colleagues. This was statistically significant from workers over 40 ($p < 0.001$). Lowe et al. (2020) used a cross-sectional, exploratory, correlational method to assess the influence of coworker social support, the nursing practice environment, and nurse demographics on burnout in 73 palliative care nurses in the United States. Researchers use a peer support subscale from The Health and Safety Executive Tool to measure colleague encouragement and support at work (Lowe et al., 2020). There was a weak correlation between social support and burnout ($r = -0.374$, $p = 0.002$). No significant relationships were found between burnout and years of nursing experience,

education level, or sex (Lowe et al., 2020). The moderating effect of coworker social support on the relationship between years of nursing experience and emotional exhaustion was tested. The results were as follows: adjusted R^2 = 0.066, SE = 8.12, and p = 0.885. Perceived coworker social support was not found to be a moderator in this study (Lowe et al., 2020). This study used a small sample size that included only hospice nurses. The size of the sample and unit worked might account for the results in this study. Research on the correlation between social support and burnout has mixed results. This may be due to the tool used, or the population studied. Most research has explored the perception of received social support and the effect on the development of burnout. Further research is needed to explore different types of social support, and any differences between received or perceived social support and burnout. Further research is needed to explore if giving social support is a burden or additional workload that adds to the development of burnout.

Interventions at the Individual Level to Decrease Burnout

Many correlations between individual level factors and burnout involve nonmodifiable risk factors. Age, gender, and years of experience of the individual are not modifiable. Research has recognized this fact and instead have attempted to decrease levels of burnout using self-care strategies or educating individuals about positive coping strategies (Slatyer et al., 2018; Wei et al., 2017; Zhang et al., 2020). Multiple researchers have focused on the individual characteristics that predict a higher risk of burnout. If individual risk factors make a subject more susceptible to burnout, then the assumption is that interventions that are focused on changing the self may in turn decrease burnout scores. The MBI is the most widely used tool used to measure burnout (Maslach, 2017). With the MBI being used so frequently in the burnout literature, most

interventional based research also uses the MBI. This means that researchers are focusing on how to decrease burnout after it already exists and are not focused on the antecedents of burnout.

Self-care may decrease the risk of burnout. Self-care modifications for burnout focuses on the use of mindfulness and mindfulness meditation and mindfulness-based yoga (Chamberlain et al., 2017; Chesak et al., 2019; Clarkson et al., 2019; Duarte & Pinto-Gouveia, 2016; Nowrouzi et al., 2015; Pérula-de Torres et al., 2019). A 2017 (Heeter et al., 2017) pilot study used a six-week technology assisted meditation program with 10 to 15 minutes self-led yoga sessions to attempt to reduce levels of burnout and compassion fatigue in healthcare professionals. Following the six-week program the intervention group burnout scores decreased from 22.22 to 20.65 ($p = 0.047$). Hilcove et al. (2020) used a randomized controlled trial to determine the effects of a mindfulness-based yoga practice on stress, burnout, and indicators of well-being among nurses and other health care professionals (n = 80). The intervention group (n = 21) attended weekly yoga class and practiced yoga independently. The control group (n = 39) did not receive the yoga intervention. Pre- and post-intervention questionnaires were used to assess for burnout, stress, and medical outcomes. There was a statistically significant improvement in stress and burnout scores for the intervention group compared to the control group (F = 9.461, $p < 0.003$). There are many different types of self-care, and self-care is a very personal method of stress reduction. This type of stress reduction may be beneficial for some personalities but may not be generalized to all nurses. Intervention based research shows promise that mindfulness practices reduce burnout in nurses.

Negative coping styles are associated with a higher risk of burnout. Intervention based research has attempted to educate nurses on coping behaviors that may protect against the

development of burnout. Nurses who experience traumatic events (e.g., patient violence) have a

higher risk of developing burnout (Lee & Sung, 2017). Lee and Sung (2017) used a quasi-

experimental study (n = 36) of emergency room nurses to evaluate the effectiveness of a violence

coping program (VCP) on burnout. Participants had experienced violence within the workplace

and were placed into either an experimental (N = 18) or a control (N = 18) group. The

experimental group received VCP twice per week over a period of 8 weeks. Burnout decreased

significantly in the experimental group (F = 52.74, p < 0.001) (Lee & Sung, 2017). Frögéli et al.

(2016) used a randomized controlled pilot trial with a sample of 113 nursing students.

Acceptance and commitment training (ACT) were used over six different two-hour program

seminars. Post-intervention scores were compared to a control group and again at a three-month

follow-up using longitudinal analysis of mean response profiles. The difference in reported

levels of burnout between groups was nonsignificant (p = 0.061). However, the burnout level in

the intervention group was lower than the control group following intervention, and the Cohen's

d effect size was 0.59. This score should be interpreted as a medium effect.

Chesak et al. (2020) used a randomized controlled trial design with 36 nurse leaders at

Mayo Clinic. The purpose of this study was to test the use of Authentic Connections Groups on

participants' resilience scores as measured through self-compassion, destress, depression,

perceived stress, and burnout measures. The intervention performed in this group consisted of

reflections and acknowledgement of stress and stressors, discussing minimizing rumination, and

increasing assertiveness and mentorship and work. In the control group, 18 individuals were

placed, and in the experimental group, 18 individuals were placed. The 18 in the experimental

group were then divided into smaller six participant groups. These participant groups were led by

two facilitators and were participatory in nature. The self-reported psychological measures were completed at baseline, post-intervention, and a three-month follow up. Statistically significant differences were found between the experimental and control group with a large effect on depression, self-compassion, and perceived stress ($p < 0.05$). A small to moderate effect was found on decreased anxiety and EE (n2ps = 0.05 and 0.03 respectively). At the three-month follow up the intervention effects on self-compassion and perceived stress were statistically significant with a large size effect (0.20). The sample for this study included only nurse leaders, but the results suggest that repeating this intervention on patient facing nurses might lead to similar results. Additional studies are needed to examine the reliability of these results, but the effect size and lower scores of the intervention groups show promise for performing further research on how to modify coping strategies.

Multiple interventions have been used to attempt to reduce burnout scores. It is important to discuss the acceptance of an intervention and the relationship of the adaptability and feasibility of the intervention and the effect on reducing burnout. Brook et al. (2021) used an explanatory sequential mixed methods study of nursing students (n = 74) and academics (n =7) to identify adaptability of feasibility of an intervention to decrease burnout and increase retention of early career nurses. The intervention included Acceptance and Commitment Therapy (ACT) and increasing social capital. ACT is an evidence-based cognitive behavioral skills program that encourages people to relate differently to difficult thoughts or emotions so they can build their life around what really matters to them (Brook et al., 2021). Social capital refers to the professional relationships, connections, feelings of shared identity, values, and reciprocity (Brook et al., 2021). Pre and post measures of acceptability were taken prospectively and

retrospectively. Semi-structured interviews took place at only one point in time. Students, through the semi-structured interviews, highlighted the personal benefits of the intervention and recognized the enduring impact of the interventions on their professional and personal lives (Brooks et al., 2021). Nurse educators should consider the addition of adding interventions to assist with coping and increasing social capital throughout the entire nursing education program.

In summary, risk factors for the individual and predictors of burnout can be summarized to include social demographics, personality types, and coping style. Certain demographics (lower age) are more likely to be at a higher risk for the development of burnout, and it is suggested that women experience burnout differently than men (Cañadas-De la Fuente, 2018b; Gomez-Urquiza et al., 2017). Research suggests that personality may be a stronger predictor than organizational factors. Coping strategies, particularly avoidance or emotion-focused coping, have a positively correlation with the development of burnout. The perception of social support has a significant negative correlation with the development of burnout. The idea that social support mitigates burnout has been supported by various authors (Maslach, 2017; Van der Heijden et al., 2019). Social support is a broad concept, and the conceptual and operational definitions differ based on the tool used to measure social support. A majority of the intervention research studies focus on how to modify the individual. This body of research focuses on reducing burnout scores after a nurse has already scores high on burnout measures. Educating nurses on active coping strategies, meditation, and self-care have been associated with reducing burnout scores.

The research reviewed regarding demographic characteristics uses a cross-sectional survey method and should be considered a Level 3 level of evidence. This is a lower quality of evidence with low causality and a potential for high bias. A small sample of the studies reviewed

should be considered a Level 2 level of evidence since they are either synthesized reviews or a meta-analysis of descriptive studies. This research has a lower potential for bias but still does not show causality. The evidence on the individual level is empirically strong. Research has focused on the associations between the individual and demographics, personality characteristics, coping style, and perception of social support from individuals at work. More research is needed to understand cultural differences between individuals, since results vary for certain individual characteristics (age, level of education) and its impact on burnout scores country to country.

Organizational Level

Multiple studies suggest that a significant relationship exists between organizational level factors and the predictability of burnout (Dwyer et al., 2019; Johnson-Coyle et al., 2016; Monroe et al., 2020; Woo et al., 2020). The type of management style, and the organizational structure have a significant effect on the development of burnout (Laschinger et al., 2015; Monroe et al., 2020; Neumann et al., 2018).

Leadership Style

Leadership style significantly affects the development of burnout (Dwyer et al., 2019; Lee et al., 2019; Monroe et al., 2020). Authentic leadership has been explored as a mediator for burnout. Authentic leadership refers to nursing managers as effective communicators, team buildings, and collaborators (Monroe et al., 2020). Monroe et al. (2020) found a statistically significant relationship ($p = 0.01$) between burnout and authentic leadership. Authentic leadership accounted for 22% of the variance in burnout. This study also used a cross-sectional survey method but instead of the MBI they used the Professional quality of life (ProQOL) scale, which measures burnout, compassion satisfaction, and secondary traumatic stress. Dwyer et al.

(2019) found similar results using a cross-sectional survey method of 136 newly licensed

graduate nurses in the United States. Burnout was significantly correlated to authentic leadership

of preceptor (r = -0.27). Lee et al. (2019) also examined the relationship between work

environment and burnout. A cross-sectional design was used including 946 nurses from three

different levels of hospitals in Taiwan. Their results found a weak correlation between authentic

leadership and emotional exhaustion (r = -0.15, p < 0.01). However, the researchers only used

the emotional exhaustion subscale of the MBI for their survey. Authentic leadership did have a

positive direct effect on the work environment, which may indirectly affect burnout. Authentic

leadership may affect the development of burnout, further research should explore any

causational relationships between the multiple variables mentioned: burnout, work environment,

and authentic leadership.

Organizational Support

Healthcare providers who perceive a higher level of organizational support score lower in

burnout measures (Lowe et al., 2020; Nogueira et al., 2018). Strong organizational support can

increase well-being and positive work outcomes among nurses. Nogueira et al. (2018) used a

cross-sectional, descriptive, survey method to assess 745 nurses from 40 public health

institutions in Sao Paulo, Brazil. There was a significant correlation between emotional

exhaustion and organizational support (r = 0.40, P = 0.010). Lowe et al. (2020) used the Practice

Environment Scale of the Nursing Work Index (PES-NWI) to assess for organizational support

and its effect on burnout among 73 palliative care nurses in the United States. One of the

subscales of the PES-NWI is leadership ability and support for nursing. Perceived organizational

support and coworker social support were found to be a significant predictor of burnout

(Adjusted R^2 = 0.432). Organizational support is negatively associated with the development of burnout. Nurses who perceive a higher level of social support are less likely to develop burnout.

Structural Empowerment

There is empirical evidence that structural empowerment has a significant negative association to the development of burnout (Boamah et al., 2017; Dwyer et al., 2019; Meng et al., 2015; Nursalam et al., 2018; Orgambídez & Almeida, 2019; Orgambídez-Ramos et al., 2017). Structural empowerment is an organizational level factor where organizational structures facilitate access to resources such as information, support, and opportunities that will help nurses learn and grow (Dwyer et al., 2019). A cross-sectional (Meng et al., 2015) study assessed 219 nurses in mainland China to explore the relationship among perceived structural empowerment, psychological empowerment, burnout and intent to stay. Structural empowerment and psychological empowerment had significant positive effects on intent to stay of nurses (ß = 0.363) and negative effects on burnout (ß = -0.534). A 2018 cross-sectional study of 134 nurses in Indonesia had similar results (Nursalam et al., 2018). Structural empowerment burnout (r = -0.371, p < 0.001). Structural empowerment increased QNWL by 39.7%. Dwyer et al. (2019) found that structural empowerment was statistically significant (p < 0.01) with a negative association to burnout. Dwyer et al. (2019) explored the influence of organizational, intrapersonal, and interpersonal influences on new graduate nurses' burnout and turnover intent. A cross-sectional online survey of 123 new graduate nurses found that 24% of the variance of burnout was explained by structural empowerment, authentic leadership of preceptors, and psychosocial capital (p < 0.001). Burnout is mitigated by structural empowerment. Structural

empowerment increases resources for nurses in order to provide greater opportunities for education, job advancement and support.

Public vs. Private Hospital

Sadati et al. (2017) used a retrospective panel study of 371 nurses in Iran to evaluate nursing burnout before and after a Health Sector Reform with an emphasis on the differences between government and private hospitals. Emotional Exhaustion increased significantly in the government hospital group (pre score, 25.3, post score 26.1, $p < 0.001$). A cross-sectional study of 745 nurses in public health institutions in Brazil was used to identify associations between burnout and characteristics of the work environment (Nogueira et al., 2018). Burnout was more consistently related to the group of institutions with unfavorable working conditions. Personal achievement and autonomy and personal achievement and organizational support had a significant negative correlation respectively (-0.44, -0.40).

Modifying the Organizational Environment

Maslach (2017) maintains that burnout is an organizational, and not a personal, problem. The new WHO (2019) definition of burnout purposely includes the words "occupational phenomenon." If this is true, then modifying the environment should allow HCPs to feel more connected and could lead to lower burnout scores. Organizations can modify their environment through providing more education for employees, changing leadership styles, changing the organizational structure. Multiple research studies suggest a strong negative correlation between providing specialty education and burnout (Chesak et al., 2019; Frey et al., 2018; Nowrouzi et al., 2015). Some research has found a positive correlation between holding a higher degree and higher levels of EE (Boerner et al., 2017; Kim & Yeom, 2018). Research among physicians have

found a negative correlation between a higher level of education or professional degree and burnout (Fred & Scheid, 2018). A majority of the research between education level, specialty education, and the risk of burnout has been done using a cross-sectional design.

Wei et al. (2017) used a randomized controlled sample design to evaluate if the use of active intervention strategies can decrease job burnout and improve performance among ED nurses. This study used a total of 102 nurses randomly selected from 8 comprehensive high-level hospitals in Jinan, China. The intervention groups and control groups were followed for six months. Self-reflection questionnaires were filled out at baseline and at the end of the study. The Student t test was used to evaluate the effects of the intervention strategies in decreasing burnout. The control group was treated with "regular management, including focus group discussions and luncheon parties" (Wei et al., 2017, p. 146). The intervention group had active intervention strategies carried out by nurse managers. These strategies included classes meant to increase communication skills, teach different approaches to conflict and emotional control, as well as working skills. The Maslach Burnout Inventory General Survey (MBI-GS) was used to measure burnout. Individual sub scales of EE, D and PA scores were given low, medium, and high cut-off scores. Job burnout was found to significantly decrease following intervention ($p < 0.01$) with p value less than 0.05 set as statistically significant. The Emotional Exhaustion (EE) scores significantly decreased following intervention (t value = -6.928, $p < 0.05$). This study shows some promise for the use of active interventions to decrease burnout. However, limitations to the study include the small sample size and that the study was performed in China where some researchers have questioned the validity and reliability of the MBI used in Asian languages (Wheeler et al., 2011; Worley et al., 2008). It would be beneficial to follow up with participants

for a longer period of time to see if the effects of the intervention on burnout held constant or changed over a longer time frame. The generalizability of these findings is limited since the study was completed in China. Chinese nurses experience a different organizational culture, with different workloads and expectations. Furthermore, the MBI Asian translation has been questioned for its validity (Wheeler et al., 2011). Many of the items load on different factors, namely questions #12 and #16 (Wheeler et al., 2011).

A significant amount of the research involving the relationship between burnout and organizational level factors involved cross-sectional, descriptive survey methods. This is a Level II type of evidence with low levels of generalizability and low levels of causational evidence. Interventions that have aimed to modify organizational level factors continue to focus on how individuals react to their environment, with few interventions focusing on a systems-level approach of modifying the organization and the individual together. The organization alone cannot be modified to mitigate burnout risk. Research suggests that both personal factors as well as organizational factors lead to burnout. Therefore, interventions should be focused on a systems-based approach. Longitudinal research is needed to examine if interventions hold over a prolonged period of time. It is unknown how long a person may experience burnout following an intervention. Further research should examine how long an intervention is needed, and how long following the intervention, to affect burnout scores.

Unit Level

Research using the unit as the level of analysis has focused on the structural aspects of the unit and their correlation to the development of burnout. Different unit factors that have been explored include: the type of unit that the nurse's work on, the number of hours worked in a

week, the shift worked. Interpersonal factors on the unit level have also been explored such as: incivility, bullying, and exposure to trauma.

Structural Factors

Unit type. There is sufficient evidence that specific units have a higher prevalence with the development of burnout. Out of the research reviewed, Woo et al. (2020) is the strongest, employing the use of a theoretical framework, large sample size, and a meta-analysis. Woo et al. (2020) conducted a meta-analysis of 113 studies and found statistically significant different prevalence rates of burnout across specialties ($p < 0.01$). The prevalence rate was highest among intensive and critical care nurses (ICU). This finding suggests that ICU nurses might be at the highest risk for developing burnout. This is congruent with previous research about burnout (da Silva et al., 2015). ICU nurses often deal with chronic high stress, end-of-life matters, and ethical issues. ICU nurses are more likely to experience moral distress which has been suggested to be related high burnout scores (Rushton et al., 2015). Pediatric nurses were also among the highest prevalence with burnout while geriatric nurses had the lowest prevalence (Woo et al., 2020).

Hours worked. Dyrbye et al. (2019) evaluated the characteristics associated with burnout and satisfaction with work-life integration (WLI) among nurses and compared their experience to other American workers. Data were collected from 8,638 nurses and 5,198 workers using a cross-sectional survey method. The multivariate analysis was repeated including only nurses who worked in the hospital, age and work hours remained independent predictors of burnout. Hämmig (2018) had similar results with a cross-sectional survey of 1,840 nurses. Working an additional six hours each week strongly increased the chances of burnout (OR 4.10, 95% CI 2.1–8.01). Neumann et al. (2018) found that nurses who worked 51-50 hours per week

scored significantly higher in Emotional Exhaustion scores (OR 0.96, 95% CI 0.51–1.18). Shah et al. (2021) used a secondary analysis of cross-sectional survey data of more than 50,000 United States based nurses. This study aimed to assess factors associated with burnout. Working greater than 40 hours per week was significantly associated with the development of burnout (OR 3.64, 95% CI, 2.73–4.85).

Shift worked. Working the night shift has a significant positive correlation with burnout (Adrienssens et al., 2015; Nascimento et al., 2019). A cross-sectional study of 1,521 nurses working in Spain found that burnout syndrome was influence by the work shift only (F = 2.44; p = 0.02). The mean scores were significantly lower for the morning shift (DMS = -1.04; $p \leq 0.05$). Shahzad et al. (2019) had similar results with night shift nurses more likely to suffer from burnout (Odds Ratio 3.91, CI: 1.7462, 8.7457). Vidotti et al. (2018) cross-sectional study of 502 nurses found that night nurses with low social support were over four times more likely to suffer from burnout (Odds Ratio 4.09, 95% CI: 2.33–7.20). Working permanent night shift is positively correlated to the development of burnout in nurses.

Nurse/patient ratio. A 2019 (Guo et al.) cross-sectional survey of 1,061 nurses in Hunan Province, China, found a positive relationship between nurse/patient ratios and the development of burnout. This study investigated the prevalence and extent of burnout on nurses and its association with resilience. The main predictors of a high level of emotional exhaustion were number of beds to nurses, shift work, separation or divorce and alcohol use (F= 19.204, p < 0.001, R^2 = 0.109). Research has not focused exclusively on the relationship between nurse/patient ratios and burnout. The empirical evidence suggests that nurse/patient ratios are only a portion of the factors that contribute to burnout.

Interpersonal Unit Factors

The depersonalization or cynicism component of burnout has been described as the interpersonal effect of burnout (Maslach, 1998). Interpersonal factors on the unit play an important role in the development of burnout. Nurses who experience incivility, exposure to trauma, bullying, or moral distress are more likely to score high in burnout measures (Brown et al., 2018; Fida et al., 2018; Rushton et al., 2015).

Traumatic events. To date, multiple research studies have examined the associations between traumatic events, toxic environments/relationships, ethical issues and burnout. Exposure to grief through experiencing a patient death may increase the risk of burnout (Boerner et al., 2017; Matsubara et al., 2019). Working in a negative ethical climate with an exposure to moral distress also suggests a higher risk for burnout (Asgari et al., 2019; Johnson-Coyle et al., 2016). Dos Santos (2020) used a phenomenological approach to understand the sources of stress and burnout among female nurses (n = 60) in South Korea. Based on the lens of the self-efficacy approach, the results indicated that workplace environmental factors increased stress, and burnout and reduced the feeling of self-efficacy. The major themes that emerged from the interviews included: workplace bullying, discrimination from other nursing professionals, family stress, and being misunderstood by members of the public (Dos Santos, 2020). Nurses who perceived a low spiritual climate may be more likely to experience burnout with a greater turnover intention (Zhang et al., 2018). Nurses who work in the ICU are at a greater risk for experiencing moral distress and end-of-life care. Nurses working in this environment are statistically significant with a positive correlation to the development of burnout (Woo et al. 2020). These environments and ethical issues may cause a nurse to experience prolonged stress,

which is a known antecedent of burnout (Maslach, 2017). Andriaenssens et al. (2015) performed a systematic review of the prevalence of burnout in emergency room (ER) nurses in an attempt to identify determinants of burnout in this population. A total number of 17 studies were reviewed (1989–2014) and found an average of 24% of ER nurses suffered from burnout. Among the research reviewed positive correlations were found between exposure to traumatic events (e.g., physical violence, suicide, death, aggression, insults, threats, and suffering) and burnout.

Ethical issues. Nurses are required to provide high-quality, safe, and effective healthcare to their patients. Nurses will face ethical dilemmas during their care for patients. Ethical sensitivity may protect nurses from the development of burnout, whereas experiencing moral distress may lead to the development of burnout (Johnson-Coyle et al., 2016; Palazoğlu & Koç, 2019). Moral distress occurs when a nurse knows the morally correct action to take but feels constrained in some way from taking that action (Jameton, 1984). Ethical sensitivity corresponds to recognizing, interpreting, and responding to concerns of patients. Nurses who are ethically sensitive are able to identify moral situations in the presence of moral problems (Palazoğlu & Koç, 2019). Palazoğlu & Koç (2019) used a descriptive, cross-sectional design (n = 236) to assess the relationship between level of ethical sensitivity and burnout in emergency room nurses. Weak, negative correlations were found between moral sensitivity and burnout ($r = -0.158$, $p = 0.015$). Rushton et al. (2015) used a cross-sectional survey of nurses (n = 114) working in critical care inpatient units in the United States to assess the characteristics in context of burnout, moral distress, and resiliency. Moral distress was correlated to the development of all three subscales of burnout (emotional exhaustion: $r = 0.49$, depersonalization: $r = 0.42$, $p < 0.01$ and personal accomplishment: $r = -0.20$, $p < 0.05$). Nurses who experience a higher level of

moral distress are at a higher risk for the development of burnout (Johnson-Coyle et al., 2016).

Johnson-Coyle et al. (2016) used a cross-sectional, descriptive, survey method to describe the

prevalence and contributing factors to moral distress and burnout among ICU healthcare

professionals. The sample (n = 169) included all healthcare providers in a 24-bed CVICU in

Canada. Moral distress and burnout scores were positively correlated (r = 0.31, p < 0.001).

Whereas burnout was negatively correlated with job satisfaction (r = -0.56, p < 0.001). A

majority of the research examining the relationship between burnout and moral dilemmas has

occurred outside the United States. The generalizability of these studies is unknown since each

country has a different culture within their hospital system and units. The research found

suggests that moral distress leads to the development of burnout in nursing. Further research

should be performed in the United States on the relationships between moral distress and the

development of burnout.

Incivility. Nurses who experience higher levels of incivility score higher on burnout

measures (Fida et al., 2018; Shi et al., 2018). Fida et al. (2018) used a cross-sectional, descriptive

study of 596 Canadian nurses to investigate the role of occupational coping self-efficacy in

protecting nurses from workplace incivility, burnout, and turnover intentions. Shi et al. (2018)

used a cross-sectional online survey to assess the impact of workplace incivility on 696 new

nurses in China. The findings showed that workplace incivility was positively correlated with

burnout (r = 0.238, p < 0.01). Resiliency moderated the association between workplace incivility

and burnout (ß= 0.240, p < 0.01).

Interpersonal Interventions

Interventional studies have focused on how to modify the individual's interactions with

other team members (Nowrouzi et al., 2015). These interventions attempt to modify the individual by helping their ability to communicate with other team members. Other interventions have focused on how to increase interprofessional communication and effectiveness (Eckstrom et al., 2020). Eckstrom et al. (2020) used a quality improvement strategy to assess teamness, burnout, job satisfaction and decision-making among interprofessional trainees and employees in the Veterans Health Administration (VA) by funding Centers of Excellence in Primary Care (CoEPCE) (N = 508). The CoEPCE initiative focused in interprofessional education of physicians, nurses, nurse practitioners, pharmacists and psychologists through practice-based learning in the context of a team-based medical home model (Eckstrom et al., 2020). Teamness was measured using the Assessment for Collaborative Environments (ACE-15) scale. Surveys were completed at two different points in time over a two-year period. For VA employees, higher ACE-15 scores were weakly correlated with lower burnout scores (year one: $r = -0.34$, $p < 0.001$; year two: $r = -0.23$, $p < 0.007$). Wei et al. (2017) used a qualitative descriptive approach to identify self-care strategies that helped mitigate the development of burnout. Six major strategies were identified including, connecting with an energy source, and nurturing interpersonal connections. Increasing interprofessional collaboration may have a mitigating effect on the development of burnout. More research is needed on using interprofessional education strategies to decrease the prevalence of burnout in nurses.

Summary

In summary, this literature review provides evidence that supports the relationships that exist between burnout and individual risk factors, burnout and associated organizational factors, and finally burnout and risk at the unit or interpersonal level (see Table 2).

Table 2. Synthesis of the Review of Literature

	Individual Level	Organizational Level	Unit Level
Antecedents that increase the risk of burnout	Male Single No Children Years of Experience Educational Degree Neuroticism Avoidant Coping Ruminating Coping High Demands Low Rewards High Effort Social Support	Leadership Style Public Hospital	Unit Type Shift Worked Hours Worked Nurse/Patient Ratio Moral Distress Exposure to Trauma Incivility
Decrease Risk of Burnout	Social Support Active Coping	Authentic Leadership Structural Empowerment Organizational Social Capital	Specialty Education Social Support
Outcomes	Absenteeism Cardiovascular Disease Lower Back Pain Anxiety Depression Alcoholism Illicit Drug Use Nurse Turnover Missed Care Infection Medication Errors		

Weak correlations between demographics (male, single, no children) and burnout exist

(Cañadas-De la Fuentes, 2018a). Certain personality types, neuroticism in particular, have been

identified as an independent risk factor for burnout. Specific coping styles have been identified

as risk factors for burnout. This literature review found inconsistencies in the effect of years

worked and burnout. There may be influence from the unit or organizational level that have a

greater effect than just the number of years worked as a nurse. Inconsistencies were also found in

level of education, or degree held, and the level of burnout. Nurses who perceive high levels of

social support are more likely to score low in burnout measures, but evidence varies based on

who provides that support.

Organizational factors that are known to decrease burnout include authentic leadership

and structural empowerment. Nurses may feel a stronger sense of empowerment and engagement

within an organization that uses structural empowerment.

Unit level risk factors associate with burnout include the specific unit worked, hours

worked, and shift worked. ICU nurses have the highest prevalence for the development of

burnout. Nurses who work above 40 hours per week are more likely to develop burnout. Nurses

who work permanent night shifts are more likely to develop burnout, although the relationship to

shiftwork might be caused by lack of sleep and not the specific shift. Nurses who experience

traumatic events such as bullying or incivility are more likely to score higher on burnout

measures. Nurses who experience moral distress are more likely to score higher on burnout

measures. Increasing interprofessional education may decrease burnout.

Existing Gaps in the Literature

There are significant gaps in burnout research which include: specific research methods

and research tools, research performed within the United States, and unit level research. Each

will be addressed below.

Interventional research. The majority of research on burnout has been completed using

a cross-sectional, descriptive, survey-based method. This method allows for a large sample size,

but does not determine causality of burnout, only correlations to the development of burnout.

This type of method removes the individual from the environment and does not use a systems

approach to attempt to explain burnout. Interventional research has been completed mainly at the individual level. Very little interventional research has been completed with the attempt of modifying the unit or the organization. Research that has looked at the way interpersonal interactions affect the development of burnout attempt to modify the individual and their communication style or coping styles.

      Research tools. Burnout research primarily uses the MBI tool to measure burnout (Maslach, 2017). Other valid and reliable tools exist in the literature but are not used to measure burnout. While the MBI is considered acceptable for use, specific translations of the MBI have been questioned for their validity in Asian languages (Wheeler et al., 2011). Research has found acceptable psychometric stability of the CBI and OLBI, yet these tools are used in very little research and even fewer research studies were found using these tools in the United States.

      United States based research. A majority of the current literature on burnout has been completed in Asia, Brazil, Spain, or Portugal. These countries have different cultures, different organizational commitments, demands, and resources. Generalizability of the findings of research completed outside of the United States is difficult. Culture of a country, and culture of a unit or organization differs greatly outside of the United States. Different countries have different nurse/patient ratios, or a different power structure between different interprofessional providers. Different levels of education, and the responsibilities for each level of education also vary greatly from country to country. Further research is needed in the United States for application to United States HCPs.

      Organizational level. Burnout occurs at the individual level, and yet Maslach's theory recognizes burnout as an organizational hazard where interpersonal relationships can either be a

resource or a hazard (Maslach, 1998). Interventions meant to modify the environment at the organizational level are lacking.

      Unit level. At the unit level, research has focused on the structural risk factors (i.e., unit, hours, shift, nurse/patient ratio) that lead to burnout, and not on the interpersonal factors. Interventional research has not focused on how to increase interpersonal relationships in order to decrease the development of burnout. There is a gap in how the daily interactions on the unit effect the nurses' development of burnout.

      Research has supported the theoretical model of the six areas of worklife (Dall'Ora et al., 2020). These are: workload, control, reward, community, fairness, and values (Maslach, 1998). Maslach theorized that the greater the mismatch between the individual and these six areas, the greater the risk for burnout. These six areas, if they are a mismatch, will deteriorate the individual's health and decrease job performance and efficacy as an outcome of burnout (Dall'Ora et al., 2020). The jobs resources-demands model (Demerouti et al., 2001) builds on Maslach's theory of burnout and further supports the workload area of worklife. The effort-reward imbalance model (Siegrist, 1996) supports the workload, reward and fairness aspects of Maslach's theory. A mismatch in community is where employees do not perceive positive connections with their coworkers and managers, with will lead to the perception of a lack of social support (Maslach, 1998). Areas of community have been explored in burnout research (Dall'Ora et al., 2020) but the results vary based on where the individual is receiving social support. Results are mixed, with burnout being negatively correlated to supervisor/leader support, but coworker support is not always significantly related to burnout (Dall'Ora et al., 2020). The term social support is commonly used in burnout research but distilling where the

support is coming from by using a unit-level analysis would increase our awareness of how day to day interpersonal interactions on the unit affect the development of burnout. Nursing research that has examined the relationship between burnout and social support, social capital, or social network have used survey methods, to date no research has used a sociometric approach applied to burnout in nurses. This research study will address the following gaps: (1) describing burnout within a United States healthcare institution; and (2) describing burnout at the unit level.

CHAPTER THREE

METHODS

The overall aim of this study is to explore relationships between burnout, collective efficacy, and the social network of interprofessional providers at the unit level. The following sub aims will be addressed:

Sub aim 1: Describe burnout at the unit level.

Sub aim 2: Describe collective efficacy at the unit level.

Sub aim 3: Describe the unit network of social supports (instrumental support, emotional support, informational support, advice-seeking support).

Sub aim 4: Describe to what degree does instrumental support account for interprofessional burnout.

Sub aim 5: Describe to what degree does emotional support account for interprofessional provider burnout.

Sub aim 6: Describe to what degree does informational support account for interprofessional provider burnout.

Sub aim 7: Describe to what degree does advice seeking support account for interprofessional provider burnout.

Sub aim 8: Describe to what degree does collective efficacy account for interprofessional provider burnout.

Sub aim 9: Determine to what degree collective efficacy, and the social support(s) predict

burnout.

The following section will describe the design and methods for this study. The methods

per aim will be discussed separately as they differ. The Maslach (1998) Multidimensional

Theory of Burnout will guide this research study. A substruction of the theoretical model, study

variables, and operational measures outlined further in this chapter are shown below in Figure 7.

Figure 7. Substruction: Theoretical Model, Study Variables, and Sub Aims
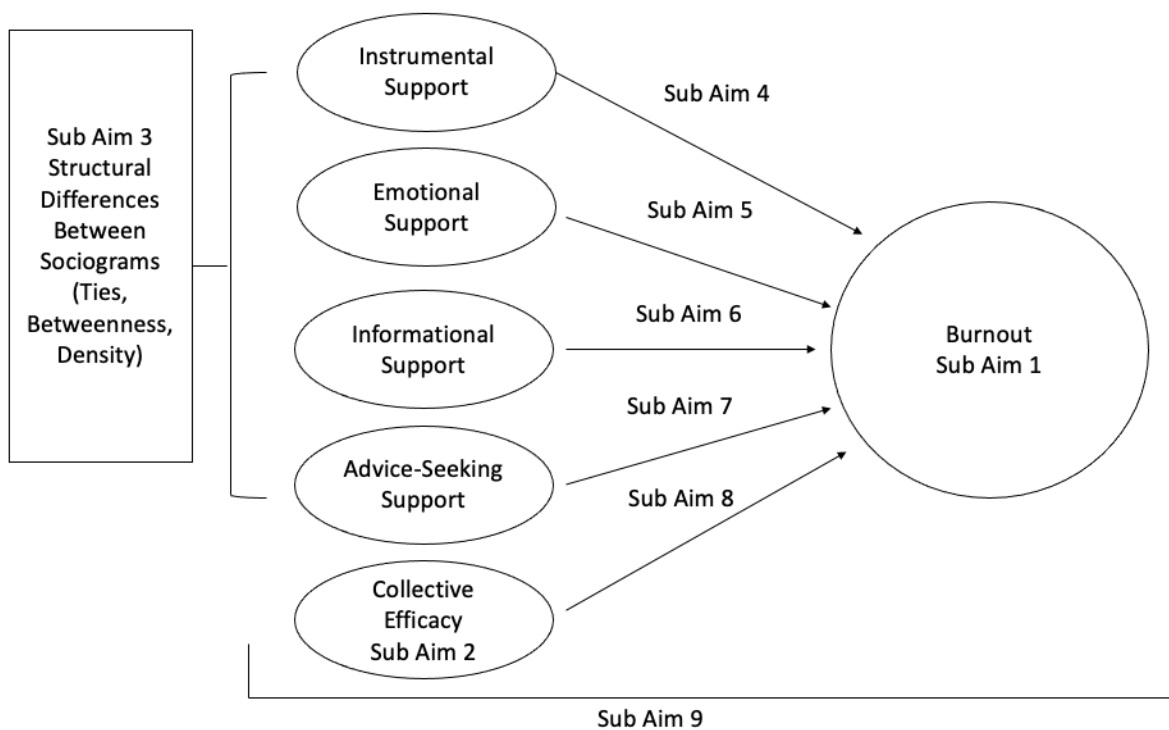
Design

The research design chosen for this study is a cross-sectional, descriptive, correlational design. For the proposed study, the Maslach Burnout Inventory (MBI) was used to examine burnout through the three subscales of Emotional Exhaustion, Depersonalization, and reduced level of Personal Achievement. The variables explored at the individual level included age, race/ethnicity, marital status, education, socioeconomic status, and employment. The unit level variables for the proposed study included unit worked, shift worked, and total hours per week worked. Nurses' social network, and social support, was assessed using a sociometric approach through the development of four sociograms. Collective efficacy will be measured using the Collective Efficacy Belief Scale (Riggs & Knight, 1994). The researcher submitted for IRB (Institutional Review Board) review. IRB exempt status was received for this study since the activities did not meet the definition of human subject research according to the 45 CFR 46.102(I).

Conceptual and Operational Definitions of Variables and Measurements

The conceptual variables examined in this research will include burnout, collective efficacy, and the interprofessional social network.

Burnout. The conceptual definition of burnout is a syndrome that is the end result of chronic organizational stress which manifests as emotional exhaustion, depersonalization, and inefficacy (Maslach, 2017). This concept was operationalized using the three subscales of the Maslach Burnout Inventory (Maslach, 1998). The validity and reliability of the MBI can be found in Chapter Two. One score will be reported for each of the three subscales. Cut-off scores

were calculated based on unit level scores (low, medium, high) to aid in visualization of sociograms and the relationships between variables.

Collective efficacy. The conceptual definition of collective efficacy is one's individual perception of the ability of a work group to successfully perform and complete shared work objectives (Riggs & Knight, 1994). This concept was operationalized using the Collective Efficacy Beliefs Scale (Riggs & Knight, 1994).

Collective Efficacy Beliefs Scale. The Collective Efficacy Beliefs Scale (Riggs & Knight, 1994) will be used to assess for the individuals' perception of collective efficacy. This instrument was developed to measure the motivational effects of group performance and work motivation (Riggs & Knight, 1994). The scale was developed to be consistent with the theoretical expectations of collective efficacy (Bandura, 1986). The Collective Efficacy Beliefs Scale was developed using seven items that reflect the conceptual definition of collective efficacy. This scale measures collective efficacy as an individual-level belief about the ability of the unit to work collectively to accomplish a goal. Riggs and Knight (1994) define the work unit in the sense as a "unit of employees with a common identity and some level of dependence on each other for the achievement of common goals" (Riggs & Knight, 1994, p. 759).

Reliability. The scale is reliable as indicated by a Cronbach's alpha coefficient score of 0.84 (Riggs & Knight, 1994). The scale has demonstrated acceptable levels of internal consistency reliability (Cronbach's alpha ranging from 0.74 to 0.82) in its use with nurses (Riggs & Knight, 1994; Smith et al., 2018).

Validity. Collective Efficacy is distinguishable from other similar scores that measure similar concepts related to efficacy such as personal efficacy (Riggs & Knight, 1994). Factor

analyses of distinct efficacy measurement scales for collective efficacy and personal efficacy demonstrated that these concepts are measurable with distinct scales (Riggs & Knight).

Scoring. The following prompt is used for individual's self-perception of collective efficacy: Think about the department in which you work. This department may be an office group, a maintenance crew, an academic department, etc. When responding to the following items, answer in reference to this group's work-related ability. A seven-item Likert-scale was developed using previously developed scales used to measure collective efficacy (Riggs & Knight, 1994). Item responses could range from 1 to 6 and are anchored using the following prompts: 1 = strongly disagree, 2 = disagree, 3 = disagree somewhat, 4 = agree somewhat, 5 = agree, and 6 = strongly agree. An overall score is reported for collective efficacy by determining the mean of the 7 items. Scores higher than the scale midpoint (3.5) indicate agreement that collective efficacy is present on participant's patient care unit.

Social network. The conceptual definition of a social network is who knows whom, or who talks to whom, within a group or organization (Valente, 2010). Social network analysis explores the types of relations people have and how those relationships affect and influence behavior (Valente, 2010). Networks have been suggested to influence the provision of social support, influence of behaviors, and explain social influence (Shoham & Messer, 2017). Therefore, social network analysis methods study the network, the unit level, and not individuals in isolation. Social network was operationalized using four different sociograms. Sociometry is a method of describing social ties and social networks (Harris, 2014). Sociometry uses a sociogram to represent relationships. A sociogram is a representation of relationships that uses dots to represent actors (individuals) and lines connecting dots to represent a dyad or tie

(relationship) between the actors (Harris, 2014). A sociogram is developed using a name generator approach (Scott, 2017). A visual network approach was used to create the sociogram, using a census/complete network approach (Scott, 2017). To create the sociogram participants were asked to select as few or as many individuals on the unit that provided a type of social support using a complete roster of employees that work on the unit (Scott, 2017). The borders of the network were defined using a list of employees provided by the manager. The list of employees included individuals that were eligible for evaluation during the 2021 yearly evaluation period. There are four different types of social support that was explored based on categories of social support and reciprocity (Bunger et al., 2018; House, 1981). Specific positions within a network can influence how communication or information is passed between individual actors. Betweenness is a measurement of centrality (counts the number of shortest paths between every pair of participants) that is used to explore how communication and information is passed between actors in a specific network (Shoham & Messer, 2017). A high betweenness score indicates which participant is the individual most responsible for the diffusion of communication, information, or support (Shoahm & Messer, 2017).

> *Emotional network.* The conceptual definition of emotional social support is the provision of caring, empathy, love and trust (House, 1981). The emotional social support was operationalized by creating a sociogram. The sociogram was created using a complete roster of the unit. The following question was used to create the sociogram:

1. Who can you rely on for emotional support? For example: Who do you feel values you as an employee on the unit? Who do you feel cares about you as an individual on the unit? Who do you trust on the unit?

Instrumental network. The conceptual definition of instrumental social support is the provision of tangible goods and services or tangible aid (House, 1981). The instrumental social support was operationalized by creating a sociogram. The sociogram was created using a complete roster of the unit. The following questions were used to create the sociogram:

1.   Who can you rely on for instrumental support? For example: Who would give you a ride to or from work on the unit? Who could you ask to take over patient care for you if you had to leave your shift unexpectedly? Who could you ask to borrow a few dollars from for lunch if you forgot your wallet? Who would you ask on the unit if you needed physical help with a patient?

Informational network. The conceptual definition of informational social support is information provided to another during a time of stress (House, 1981). The informational social support was operationalized by creating a sociogram. The sociogram was created using a complete roster of the unit. The following questions were used:

1.   Who can you rely on for informational support? For example: Who would you ask on the unit if you needed technology support with a device or computer on the unit? Who would you ask on the unit for help with patient care during a time of stress?

Advice-seeking network. The conceptual definition of advice seeking social support is a deliberate action where an individual asks another for expertise involving a work-related task (Lazega et al., 2012). The advice seeking social support was operationalized by creating a sociogram. The sociogram was created using a complete roster of the unit. The following questions were used:

1. Who do you ask for advice on the unit? For example: Who would you ask on the unit for advice about patient care?

Demographic Questionnaire

Demographics were assessed for each individual and included the measurement of age, gender, ethnicity/race, marital status, education, and years of experience. Questions were asked about the unit characteristics for each participant in this hospital unit, including shift worked, length of employment in this unit, hours per week worked, and hours per shift worked. This information allowed the researcher to examine the relationships between the variables and any patterns in relationships to other variables being used.

Setting

The setting for this study was a 547 licensed bed, Level I Trauma Center in the Midwestern United States. The population of interest for this research study were employees who work in an intensive care unit (ICU) inpatient hospital setting in the Midwestern United States. All personnel working on the unit were asked to participate in this study via an online invitation to questionnaires using a web-based survey tool for authorizing and distributing surveys.

<div align="center">

Sample

</div>

A convenience multi-layer sample was used for this investigation. Convenience sampling is a nonprobability form of sampling that does not rely of random selection of participants (Trochim et al., 2016). This type of sampling is appropriate for this study design and method in that any individual that meets the criteria within the unit has the same probability of being used. A multi-layer sample was used with sampling criteria at the individual level and at the unit level.

Burnout is an individual level of analysis, whereas collective efficacy and the social networks are at the unit level of analysis.

Inclusion Criteria

The inclusion criteria for the individual unit level of analysis were anyone who works on the unit (including healthcare professionals who provide direct patient care, managers, and staff) for longer than six months, and a minimum number of 24 hours per pay period.

The inclusion criteria for the group unit level of analysis included: an inpatient ICU unit with a minimum number of 30 beds.

Exclusion Criteria

The exclusion criteria included employees who have worked on the unit less than six months.

The exclusion criteria for the group level unit of analysis included: any outpatient units with fewer than 30 beds.

Sample Size

Social network analysis research does require the use a G-Power analysis to estimate sample size or power. To obtain a valid sample, first the researcher defined the boundaries for the unit, then the researcher obtained a list of direct-patient care employees who met the eligibility criteria. Social network analysis research recommends a minimum of 80% of the unit is required for validity (Costenbader & Valente, 2003). Based on the current social network analysis research available, and the list of employees working on the unit, the estimated sample size for this study is 38 participants out of a total population of 47 possible participants. This sample size was estimated using the employee list provided by the manager, and employees

eligible for inclusion in this study. An a-priori G-Power analysis was completed to assess for

sample requirements for the variables selected. A correlational two-tailed analysis was used

where a sample size of 29 participants would yield a large effect size, a sample size of 84 would

yield a moderate effect, and a sample size of 782 participants would yield a small effect.

<div align="center">**Recruitment of Study Participants**</div>

For the recruitment process, contact was established with the administrative and medical

director of the ICU. The PI met with the administrative team, the managers, the nurses on the

unit to review the study purpose, subject inclusion/exclusion criteria, and contact information for

participating in the study.

The recruitment process used in-person staff meetings and informational flyers with

communication about the study from the administration team on the unit. The unit manager

identified the timing of in person staff meetings so that the PI was present at the meetings to aid

recruitment. The approved study flyers were posted in the ICU unit, locker room, and break

room. The flyer provided an abbreviated purpose for the study, the target population, and will

instruct individuals to contact the investigator by phone number or email if they are interested in

participating in the study. To aid the recruitment process, participants received a $10 Amazon

gift card after completing and submitting the questionnaire.

In addition, the PI was present on the unit to inform staff nurses of the study and to be

available to answer any questions regarding the study. The PI was present on the unit during shift

changes, and during periods of the day and night shift to recruit participants and answer

questions related to the study.

Two instruments were used to collect data. The two instruments were: the Maslach Burnout Inventory (MBI), and the Collective Efficacy Beliefs Scale. The nurses' social network was collected through the construction of a sociogram. A list of study variables and how they were measured are depicted in Table 3 along with the measurement tools which are described following that.

Table 3. Study Variables and Measurements

	Variable	Measurement
Characteristics of the Individual	Demographics	Age, race, ethnicity, marital status, education level, years of experience
Characteristics of the Unit	Demographics	Shift worked, hours per week worked, hours per shift worked, length of employment on the unit
Burnout	Exhaustion Depersonalization Personal Achievement	Maslach Burnout Inventory (MBI) (1998)
Collective Efficacy	Collective Efficacy	Collective Efficacy Beliefs Scale
Social Capital	Social Network • Emotional • Instrumental • Informational • Advice-Seeking	Sociogram Ties Nodes Network Density Betweenness

Human Subjects' Concerns and Ethical Considerations

To protect the safety and rights of the participants, the proposal was submitted to the Institutional Review board at Loyola University and Loyola University Health System (LUHS). To be eligible for this study, all participants had to be employees of the organization and

working on the ICU chosen for the study. Participants received a description of the study, along with a reiterated summary before the online questionnaire began, to ensure that unit staff were informed and agreed to participate in the study prior to providing data. Completion of the online survey implied informed consent. Confidentiality of the participants was maintained by using a unique number instead of a name on each survey. Confidentiality was honored and maintained by not using the unit charge nurse or manager to recruit participants to ensure that a power differential does not exist in the recruitment strategy. Participants who completed the survey received a $10.00 Amazon gift card as a token of appreciation. In order to receive a gift card, participants were required to leave an email address to deliver the gift card code. A crosswalk was established to deidentify participants email addresses from responses. The individual participants' names, email addresses and responses are known only to the researcher. All future publications, presentations, and sharing of data were deidentified.

Attention to ethical codes and principles of scientific research was maintained. Respect for persons was maintained by allowing all potential participants the right to refuse to participate in the study. Beneficence was maintained through little risk of psychological upset being anticipated through answering survey questions and results could enhance knowledge related to burnout. The researcher advised participants to answer the survey questions at a time that will not interfere with work obligations. All participant responses will remain anonymous in future publications, presentation, or dissemination of information. Participation or non-participation will not affect work performance evaluations and individuals' managers, or supervisors will not be informed of their participation or have access to research data.

Study Procedures/Protocol, Data Collection, and Management

Data were collected by the PI going to the unit to introduce themselves, the aims of the study, and the method during in person unit meetings. Fliers were posted throughout the unit with information relevant to the study. The PI made themselves available during multiple shifts on the unit to meet with the participants in person to answer questions related to the study without the manager present to avoid coercion. Individuals were asked to complete a survey at one point in time. Surveys were collected until the minimum number of participants have been met.

The survey was created used RedCap™. RedCap™ created the survey in an online format. Each survey was numbered to maintain confidentiality of the participants. Data were also stored using RedCap™. Data was kept secure and private using this method. Back-up copies of data were kept on a password protected external drive storage device. Data were entered into SPSS by the primary researcher and checked a second time for accuracy. All surveys were checked for completeness for missing data (Hulley et al., 2013).

Data were inputted into SPSS for cleaning before analyses to check for coding errors and for an initial screening of missing data. Each variable was named, and each survey was given a unique ID number. Total scores for all variables were calculated for burnout, collective efficacy, and various social network characteristics (nodes, ties, centrality, betweenness). There were no missing data for the variables. Data were inputted into R-Studio for the creation of sociograms and calculation of individual betweenness scores.

Data Analysis

In this study, data were analyzed using Spearman's correlation, multiple regression,

social network analysis methods, and descriptive methods. Details regarding the specific analysis is explained with each aim below.

Sub Aim 1. Narrative Descriptive

The purpose of this aim was to describe the prevalence of burnout present on the unit.

Analysis for sub aim 1. Descriptive statistical methods were used to describe the level of burnout present on the unit. The MBI was be used to operationalize burnout using the three subscales of the tool. Three individual scores were reported for each participant. The overall mean score for each of the three subscales was calculated.

Sub Aim 2. Narrative Descriptive

The purpose of this aim was to describe the prevalence of collective efficacy on the unit.

Analysis for sub aim 2. Narrative descriptive methods were used to describe if collective efficacy was present on the unit. The Riggs and Knight (1994) Collective Efficacy scale was used to operationalize collective efficacy. The overall mean score for the unit was calculated. A mean score above 3.5 determined whether collective efficacy existed.

Sub Aim 3. Narrative Descriptive

The purpose of this aim is to determine any differences between the emotional, instrumental, informational, and advice seeking social support networks.

Analysis for sub aim 3. Narrative descriptive methods were used to compare the four sociograms. The number of actors, number of ties, and density will be described and compared between the four sociograms.

Number of actors. Total number of actors was recorded. An individual that is named by a minimum of two other individuals will be included in the network (Scott, 2017).

Network ties. Total number of network ties will be recorded. A tie will be recorded between two individuals if person 1 names person 2, person 2 names person 1, or both (Scott, 2017).

Network density. The density of the network is defined as the sum of the ties divided by the number of possible ties (Scott, 2017). Network density will provide information about how effective communication is within the network (Scott, 2017). Network density indicates how densely connected the network is overall on a scale of 0 (no ties exist) to 1 (every possible tie exists among network members) (Harris, 2014). The following equation will be used to calculate network density. For an undirected network, network density is calculated as

$$\frac{L}{n(n\text{-}1)/2}$$

where L is the number of connections in the network and n is the number of individuals in the network.

Sub Aim 4 Methods: Development of a Sociogram and Spearman's Rank Correlation

The purpose of this aim is to determine to what degree burnout among employees on a unit can be explained by instrumental social support within the network.

Analysis for sub aim 4. The analysis for this question used both a sociometric approach and Spearman's correlation between burnout and the betweenness of the individual within the network. A visual depiction of the network, also known as a sociogram was created. A sociometric approach uses a sociogram, or a graphic depiction, of individuals (actors) within the network, and the dyads (or ties) between two actors (Harris, 2014). A tie between actors will be recorded if one individual name another individual on the unit. Betweenness was calculated for every individual in the network. Betweenness is a type of centrality that counts the shortest

number of paths between each actor in the network (Shoham & Messer, 2017). Betweenness can

be used to estimate the flow of communication and support through a network. Betweenness was

calculated using R-Studio and the following equation:

$$C\_B(v) = sum(g\_ivj \,/\, g\_ij,\ i,j\colon i! = j, i! = v, j! = v)$$

Where g_ijk is the number of geodesics from i to k through j.

Spearman's correlation was used to determine the relationship between individual's

betweenness and burnout. Spearman's rank correlation coefficient is a nonparametric measure of

rank correlation that assesses the relationship between variables (Kleinbaum et al. 2014). The

data must be monotonically related, where if one variable increases (or decreases), the other

variable also increases (or decreases). The formula for Spearman's rank correlation is:

$$\rho = 1 - \frac{6\sum d_i^2}{n(n^2 - 1)}$$

Where d_i = the difference in paired ranks and n = number of cases.

Sub Aim 5 Methods: Development of a Sociogram and Spearman's Rank Correlation

The purpose of this aim will be to determine to what degree burnout among employees

on a unit can be explained by emotional social support.

Analysis for sub aim 5. The same method used for RQ 1 was used for RQ 2. The

dependent variable is burnout, independent variable is the betweenness score of the individual

within the emotional network.

Sub Aim 6 Methods: Development of a Sociogram and Spearman's Rank Correlation

The purpose of this aim will be to determine to what degree burnout among employees

on a unit can be explained by informational social support.

Analysis for sub aim 6. The same method used for RQ 1 was used for RQ 3. The dependent variable is burnout, independent variable is the betweenness of the individual within the informational network.

Sub Aim 7 Methods: Development of a Sociogram and Spearman's Rank Correlation

The purpose of this aim will be to determine to what degree burnout among employees on a unit can be explained by the centrality of the individual within the advice seeking network.

Analysis for sub aim 7. The same method used for RQ 1 will be used for RQ 4. The dependent variable is burnout, independent variable is the betweenness of the individual within the advice seeking sociogram.

Sub Aim 8 Methods: Spearman's Rank Correlation

The purpose of this aim is to determine to what degree burnout is mediated by collective efficacy.

Analysis for sub aim 8. Spearman's rank correlation was used because the data met the assumptions for use. The data was measured using ordinal scores and the variables were monotonically related to the other variable (Trochim et al., 2016).

Collective efficacy is the independent variable, and the burnout is the dependent variable.

Sub Aim 9 Methods: Model Selection

The purpose of this aim is to determine the best model fit between the selected variables and the subscales of burnout.

Analysis for sub aim 9. Model selection and model verification was performed as described by Kutner et al. (2016). This method will be used to discover the functional relationship between the dependent variable (burnout) and the predictors (betweenness and

collective efficacy). A backward stepwise regression will be used to develop the best model by starting with the full model and deleting any independent variable with a p value below 0.1. The goal of model building is to predict a response on the dependent variable (Kutner et al., 2016). SPSS^{TM} was used for model selection and model verification.

CHAPTER FOUR

RESULTS

The overall aim of this descriptive study was to explore what relationships exist between burnout, collective efficacy, and the social network of interprofessional providers at the unit level. This chapter will present a description of the sample and the results of the study per research question.

Sub-aim 1: Describe burnout at the unit level.

Sub-aim 2: Describe collective efficacy at the unit level.

Sub-aim 3: Describe the unit network of social supports (Instrumental support, Emotional support, Informational support, Advice-seeking support).

Sub-aim 4: Describe to what degree does the instrumental support account for interprofessional burnout.

Sub-aim 5: Describe to what degree does emotional support account for interprofessional provider burnout.

Sub-aim 6: Describe to what degree does informational support account for interprofessional provider burnout.

Sub-aim 7: Describe to what degree does advice-seeking support account for interprofessional provider burnout.

Sub-aim 8: Describe to what degree does collective efficacy account for interprofessional provider burnout.

Sub-aim 9: Determine to what degree collective efficacy, and the social support(s) predict

burnout.

Sample Description

This study was completed at a licensed 547-bed, Level I Trauma Center in the

Midwestern United States. The population of interest for this research study were employees

who work in an intensive care unit (ICU) inpatient hospital setting in the Midwestern United

States. This ICU contained greater than 30 inpatient beds and employs 47 direct patient care

staff members when data were collected (August–September 2021). The sample for this study

was 39 participants, which met the required 80% for validity for social network analysis

methods, (Costenbader & Valente, 2003) and a large effect size for the two tools. Past research

indicated that burnout and collective efficacy demonstrated a large effect size (Beckstead, 2002;

Huh, Reigeluth & Lee, 2014).

Table 4 describes the demographics of the sample. The demographics of the study sample

resembled the demographics for the United States population of nurses (HRSA, 2019). The

sample included mainly nurses (87.2%), who held a bachelor's degree (79.5%), with a mean age

of 38.23 years. The most common racial or ethnic group was Caucasian (61.5%). Half the

participants work the day shift (7a.m.–7 p.m.) (48.7%), with the other half split between working

the night shift (7 p.m.–7 a.m.) (25.6%) or rotating between days and nights (25.6%) (see Table

4). Years of total healthcare experience ranged from 1 year to 38 years, with a mean of $m = 12.92$

years. Years working in the ICU ranged from 0.5 years to 37 years, with a mean of $m = 11.23$

years. Hours of weekly work ranged from 24 hours per week to 50 hours per week, with a mean

of $m = 36.72$ hours per week (see Table 4).

Table 4. Sample Description

Participant Characteristics	% (*n*) (Total participants =39)	
Race/Ethnicity		
Asian	17.9% (7)	
Black	7.7% (3)	
Hispanic	12.8% (5)	
White	61.5% (24)	
Marital status	% (*n*)	
Currently Married	46.2% (18)	
Divorced	10.3% (4)	
Never Married	43.6% (17)	
Role	% (*n*)	
Nurse	87.2% (34)	
Other Direct Patient Care Staff	12.8% (5)	
Level of Education	% (*n*)	
Some College	15.4% (6)	
Bachelor's	79.5% (31)	
Master's	5.1% (2)	
Job Shift	% (*n*)	
Days	48.7 (19)	
Nights	25.6 (10)	
Rotating	25.6 (10)	
	m (SD)	Range
Age	38.23 (12.41)	2.00–65.00
Total experience	12.92 (11.84)	.00–38.00
Years in ICU	11.23 (11.79)	.50–37.00
Hours of Weekly Work	36.72 (4.44)	4.00–50.00

Sub Aim 1: Describe Burnout at the Unit Level

  Burnout. Burnout was measured in terms of emotional exhaustion (EE),

depersonalization (DP), and personal accomplishment (PA). Table 5 displays the descriptive

statistics for burnout scale scores.

Table 5. Maslach Burnout Inventory (MBI) Scores

Maslach Burnout Inventory ($n = 39$)	$m(SD)$	Range
Emotional Exhaustion	34.03 (11.12)	16.00–53.00
Depersonalization	12.72 (7.18)	0.00–24.00
Personal Accomplishment	35.51 (7.74)	17.00–48.00

  Emotional exhaustion. Emotional exhaustion (EE) as measured by the Maslach Burnout

Inventory (MBI) ranged from 16 to 53 with a mean score of $m = 34.05$ (9 items) with a normal

distribution (see Figure 8). Cut-off scores were calculated based on the range of the participants'

burnout subscale scores using tertials, where a high score was between 43 to 53, medium equals

30 to 42, and low equals 16 to 29. Results indicated that, on-average, participants experienced

emotional exhaustion a little less frequently than once a week, with 0.08% (3 participants)

experiencing EE less than a few times a year, 25.6% (10 participants) experiencing EE once a

month or less, and 74.4% (26) experiencing EE greater than a few times a month.

Figure 8. Histogram of Emotional Exhaustion Subscale Scores
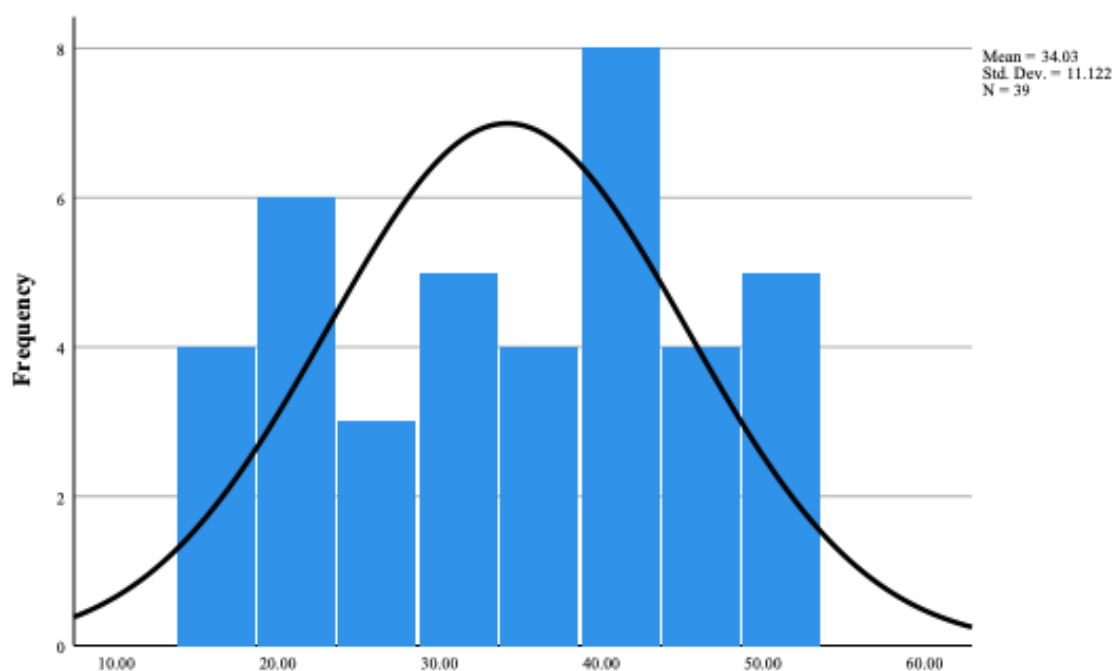
Depersonalization. The depersonalization (DP) subscale as measured by the MBI ranged

from 0 to 24 with a mean score of $M = 12.72$ (5 items) with a normal distribution (see Figure 9).

Cut-off scores were calculated in the same manner as the emotional exhaustion subscale scores.

With a high score equaling 17–24, a medium score equaling 8–16, and a low score equaling 0–7.

Results indicated that, on average, participants experienced depersonalization a little more

frequently than once a month, with 25.6% (10 participants) experiencing DP less than a few

times a year, 23% (9 participants) experiencing DP once a month or less, and 51% (20

participants) experiencing DP greater than a few times a month.

Figure 9. Histogram of Depersonalization Subscale Scores
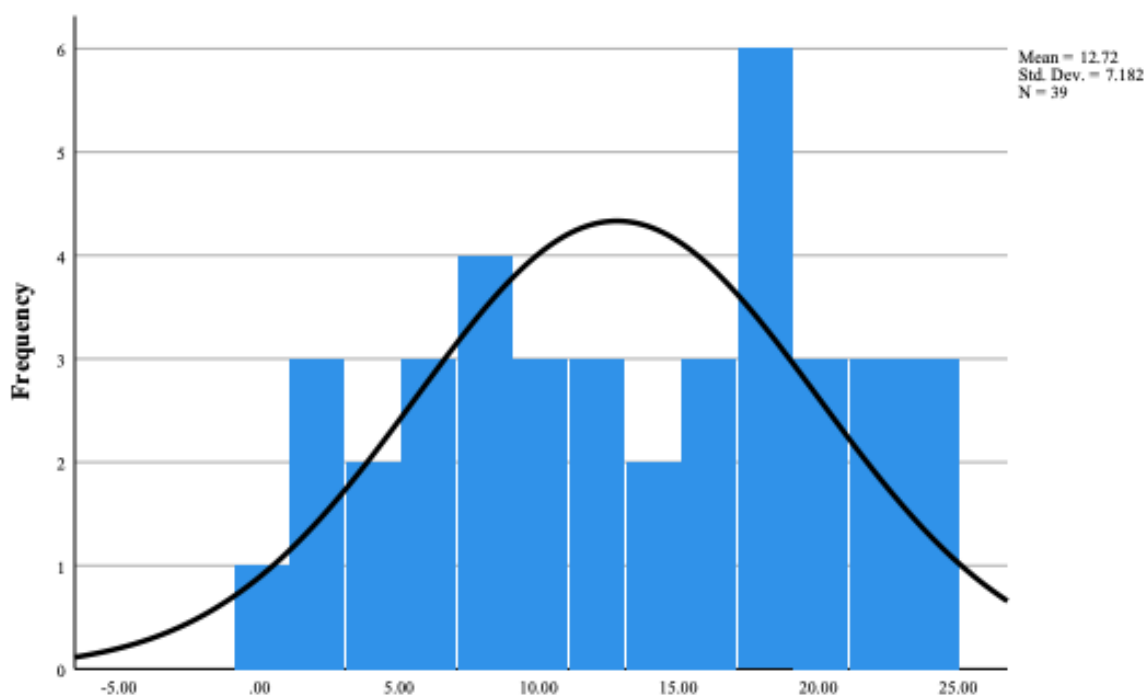
Personal accomplishment. The personal accomplishment (PA) as measured by the MBI

ranged from 17 to 48 with a mean score of $M = 35.51$ (8 items) with a normal distribution (see

Figure 10). Results indicated a little more frequently than once a week. Cut-off scores were

calculated based on the participants' burnout subscale scores. With a high score equaling 39–48,

a medium score equals 28–38, and a low score equals 17–27. Results indicated that, on average,

participants experienced personal accomplishment a little more frequently than once a month,

25.6% (10 participants) experiencing PA less than a few times a year, 28% (11 participants)

experiencing PA once a month or less, and 46.2% (18 participants) experiencing PA greater than

a few times a month.

Figure 10. Histogram of Personal Accomplishment Subscale Scores
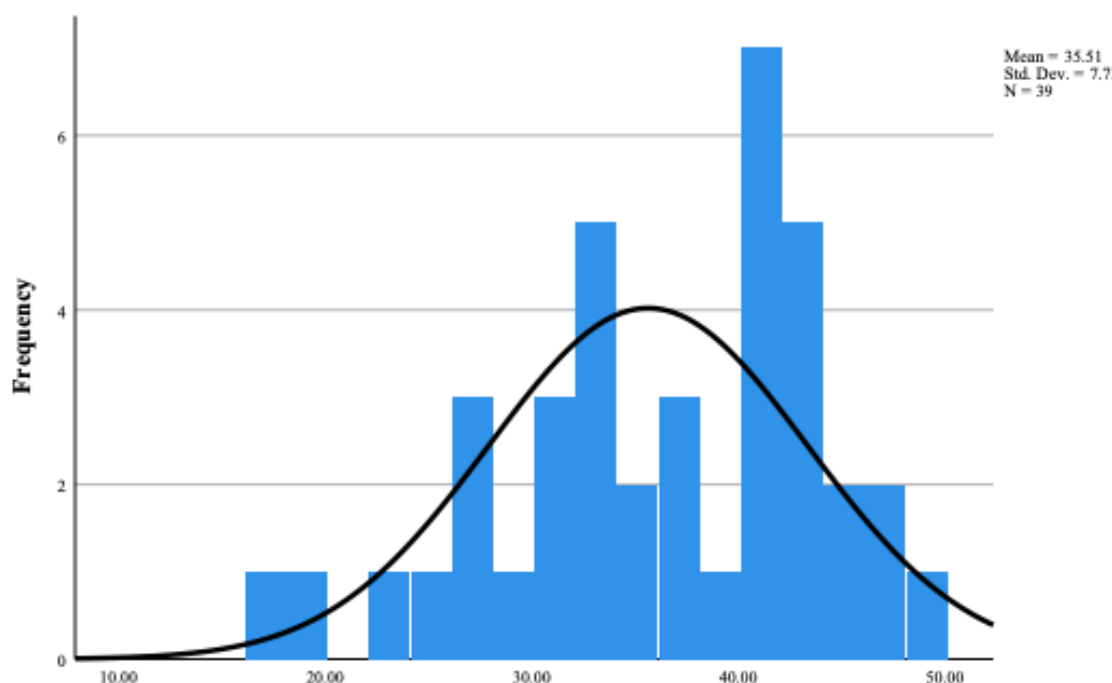
Burnout for this sample had an EE sample mean score of 34.05, which indicates that emotional exhaustion was experienced on average a little less frequently than once a week. The depersonalization score *m* of 12.72 indicates that depersonalization was felt on average a little more frequently than once a month. The personal accomplishment mean score of 35.51 indicates that this subscale of burnout was felt on average a little more frequently than once a week.

Sub Aim 2: Describe Collective Efficacy at the Unit Level

Collective efficacy. Table 6 displays the descriptive statistics for the collective efficacy scores. The collective efficacy scores ranged from 2.57 to 6.00 with a mean score of $m = 4.41$. Scores for this measurement tool could range from 0 to 47.00, with mean scores ranging from 0 to 7.00. The collective efficacy scores had a normal distribution (see Figure 11).

Figure 11. Histogram of Collective Efficacy Scores
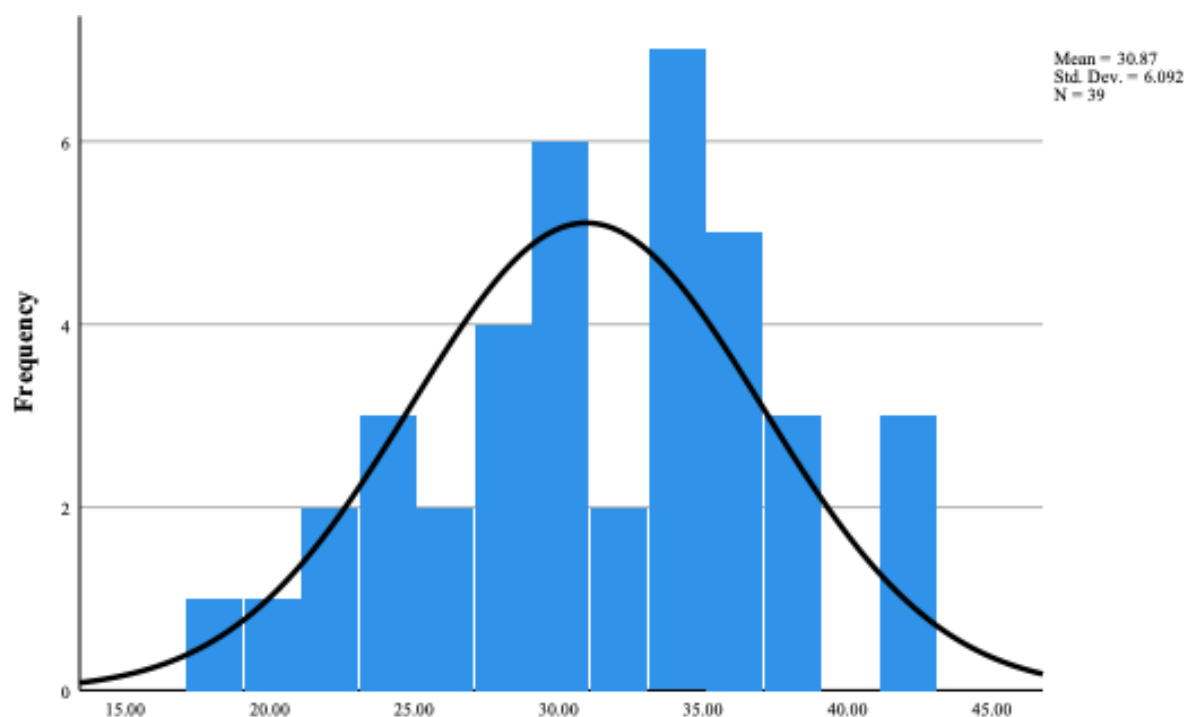
Collective efficacy, as indicated by a mean greater than 3.5, is present on the unit. The

mean score of 4.41 indicated that the participants perceive that collective efficacy was present

within this unit (see Table 6).

Table 6. Collective Efficacy Scores

	m(SD)	Range
Collective Efficacy ($n = 39$)	4.41 (0.87)	2.57–6.00

Sub Aim 3: Unit Network Social Supports Descriptions

Social support. Social support was described in terms of four different sociograms

(instrumental, emotional, informational, and advice-seeking). A visual network approach was

used to create the sociogram, using a census/complete network approach. Table 7 includes the

descriptive statistics for the four types of social support.

Table 7. Description of Sociograms for Emotional, Informational, Instrumental, Advice-Seeking
Social Support

Sociogram	Vertices	Edges	Density	m(SD)	Range	Highest Betweenness
Emotional ($n = 39$)	39	218	0.147			
Betweenness ($n = 39$)				19.17 (24.78)	0.00–110.04	Manager
Informational ($n = 39$)	39	278	0.188			
Betweenness ($n = 39$)				21.94 (39.35)	0.00–205.04	Manager
Instrumental ($n = 39$)	39	238	0.16			
Betweenness ($n = 39$)				13.62 (25.67)	0.00–117.38	Manager
Advice-Seeking ($n = 39$)	39	248	0.67			
Betweenness ($n = 39$)				20.11 (28.55)	0.00–93.97	Nurse

Emotional support. Figure 12 shows the sociogram for emotional support. The

descriptive statistics for all four sociograms are displayed in Table 7. The emotional support

sociogram contained 39 vertices (nodes), which indicates the number of participants who

completed the survey. A non-directional sociogram was created, which means that a tie was

recorded when one participant identified another participant as providing emotional support. The

perception of social support did not need to be mutual among participants to be recorded as a tie.

The sociogram contained 218 connections between participants (ties). The density of this

network was 14.7% out of 100%. This indicates a sparse network. Betweenness centrality scores

were calculated for each individual participant. Betweenness centrality is a measurement used to

calculate the individual(s) that are the most important for the transmission of emotional support.

For emotional support, individual betweenness scores ranged from 0 to 110.04 with a mean of *m* = 19.17 (see Table 7).

The betweenness scores were highly skewed indicating that a few people on the unit diffuse emotional support (see Figure 12). The highest betweenness score for the emotional network was identified was the manager. This indicated that the manager is the most important individual on the unit for the transmission or diffusion of emotional support.

Figure 12. Emotional Support Sociogram
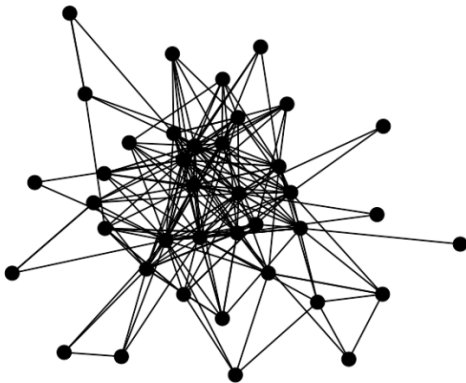
Figure 13. Histogram of Emotional Support Betweenness Scores
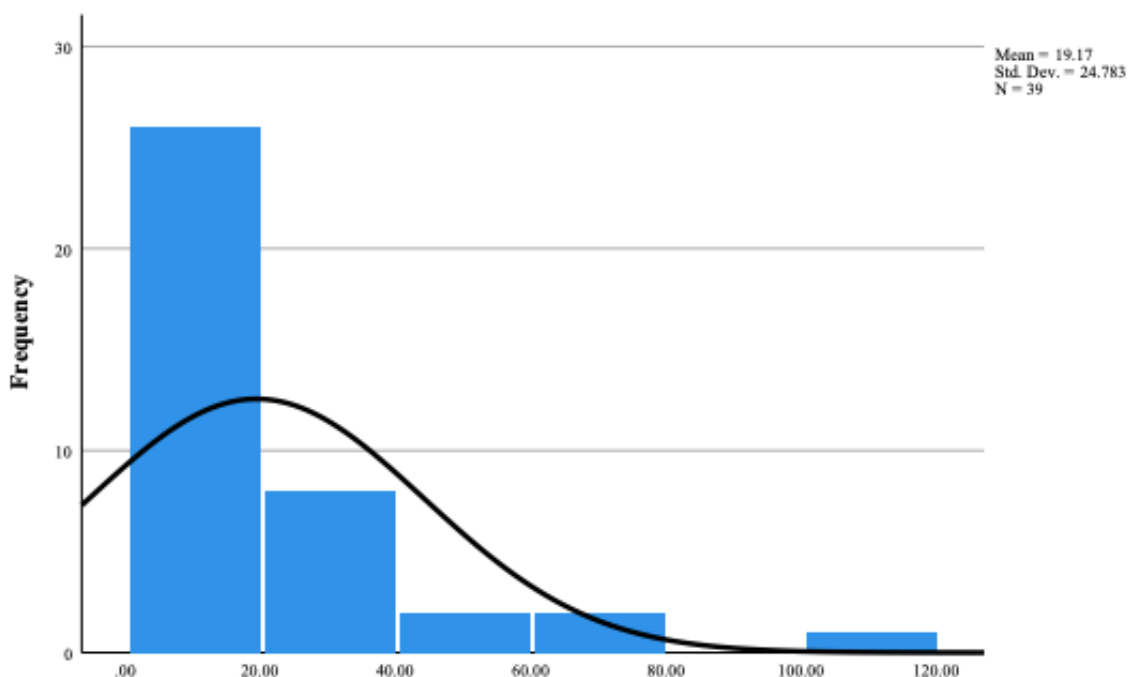
Instrumental support. Figure 14 shows the sociogram for instrumental support. The instrumental support sociogram contained 39 vertices (nodes), which indicates that 39 participants completed the survey. The instrumental support sociogram contained 218 edges (ties), each tie indicates that a participant perceived instrumental support from another participant. The density for instrumental support was 16% out of 100%. This indicates a sparse network. Betweenness centrality scores were calculated for each individual participant. For instrumental support scores, betweenness scores ranged from 0 to 205.04 with a mean of $m = 21.94$ (see Table 7). The betweenness scores were highly skewed (see Figure 15). The unit manager had the highest betweenness score. This indicates that the manager was the most important individual on the unit for the transmission or diffusion of instrumental support.

Figure 14. Instrumental Sociogram
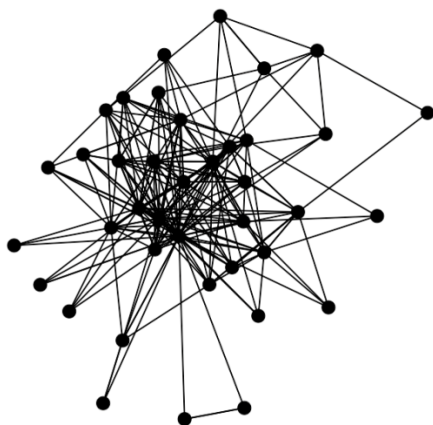
Figure 15. Histogram of Instrumental Support Betweenness Scores

Mean = 21.94
Std. Dev. = 39.352
N = 39
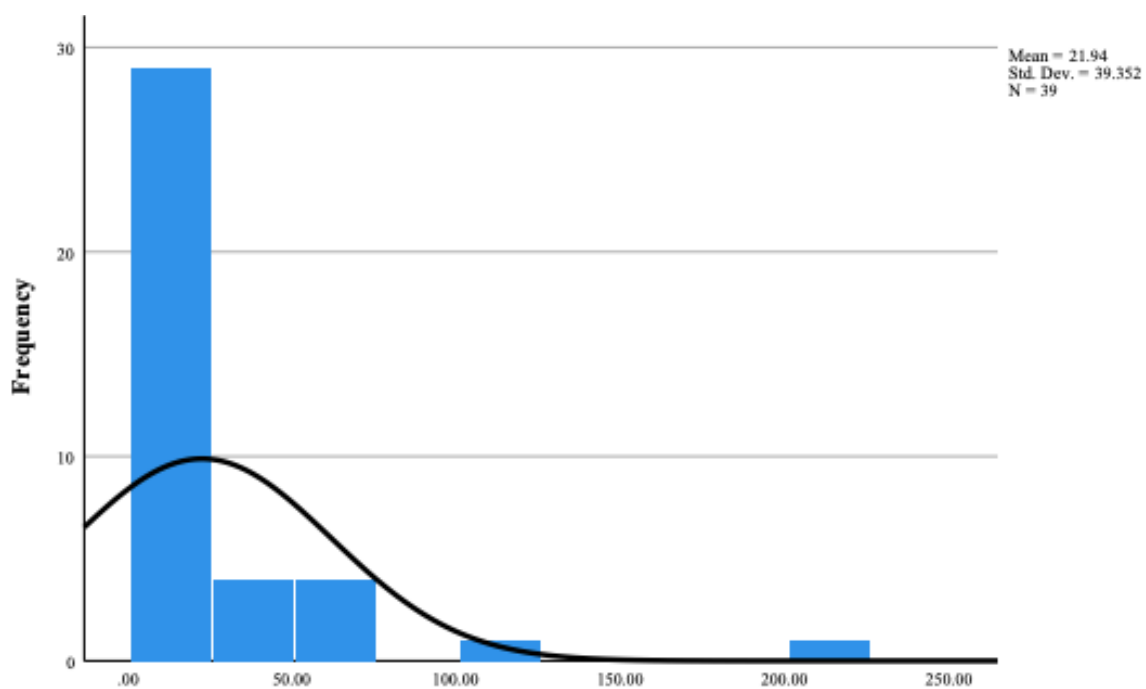
Informational support. Figure 16 shows the sociogram for informational support. The informational support sociogram contained 39 vertices (nodes) and 218 edges (ties). The density for informational support was 19% out of 100%. This indicates a sparse network. For

informational support, betweenness scores ranged from 0 to 117.38 with a mean of $M = 13.62$

(see Table 7). The betweenness scores for informational support were highly skewed (see Figure

17). The unit manager had the highest betweenness score. This indicates that the manager is the

most important individual on the unit for the transmission or diffusion of informational support.

Figure 16. Informational Support Sociogram
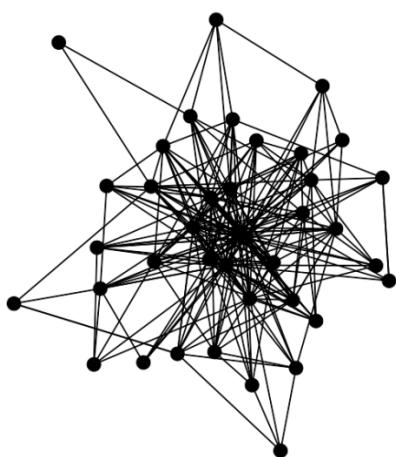
Figure 17. Histogram of Informational Support Betweenness Scores
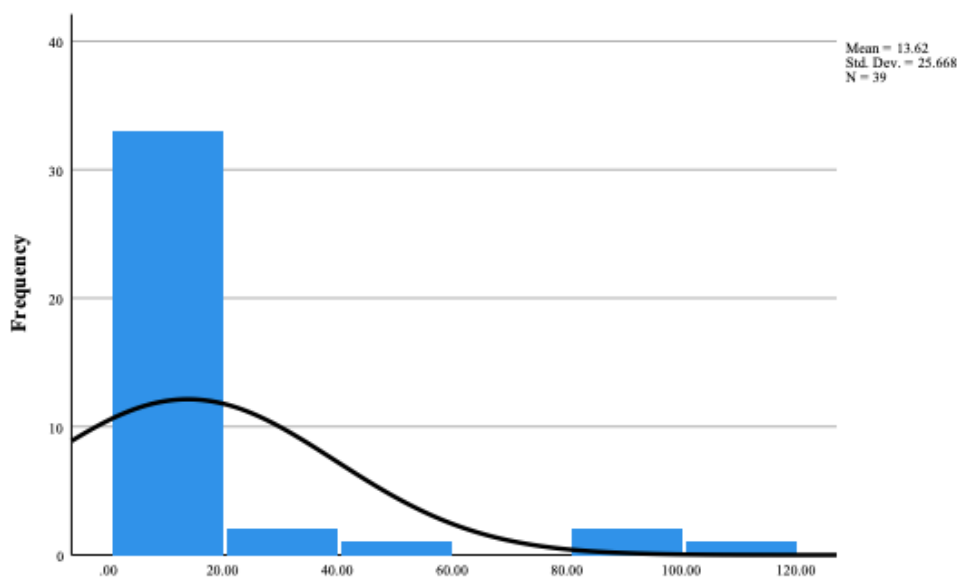
Advice-seeking support. Figure 18 shows the sociogram for advice-seeking support. The advice-seeking support sociogram contained 39 vertices (nodes) and 248 edges (ties). The density for informational support was 67% out of 100%. This indicates a dense network. For advice-seeking support, betweenness scores ranged from 0 to 93.97 with a mean of $M = 20.11$ (see Table 7). The betweenness scores were highly skewed (see Figure19). A nurse on the unit with seniority ICU experience had the highest betweenness score. This indicated that this nurse is the most important individual on the unit for the transmission or diffusion of advice-seeking support.

Figure 18. Advice-Seeking Sociogram
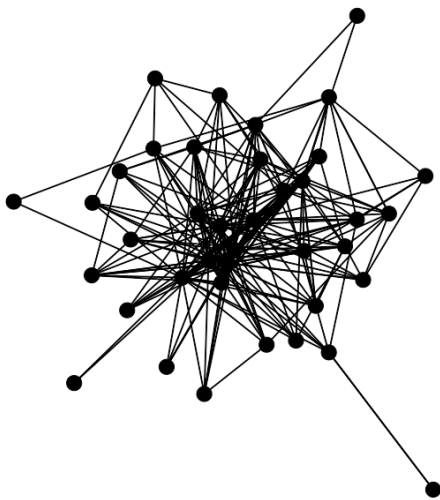
Figure 19. Advice-Seeking Support Betweenness Scores
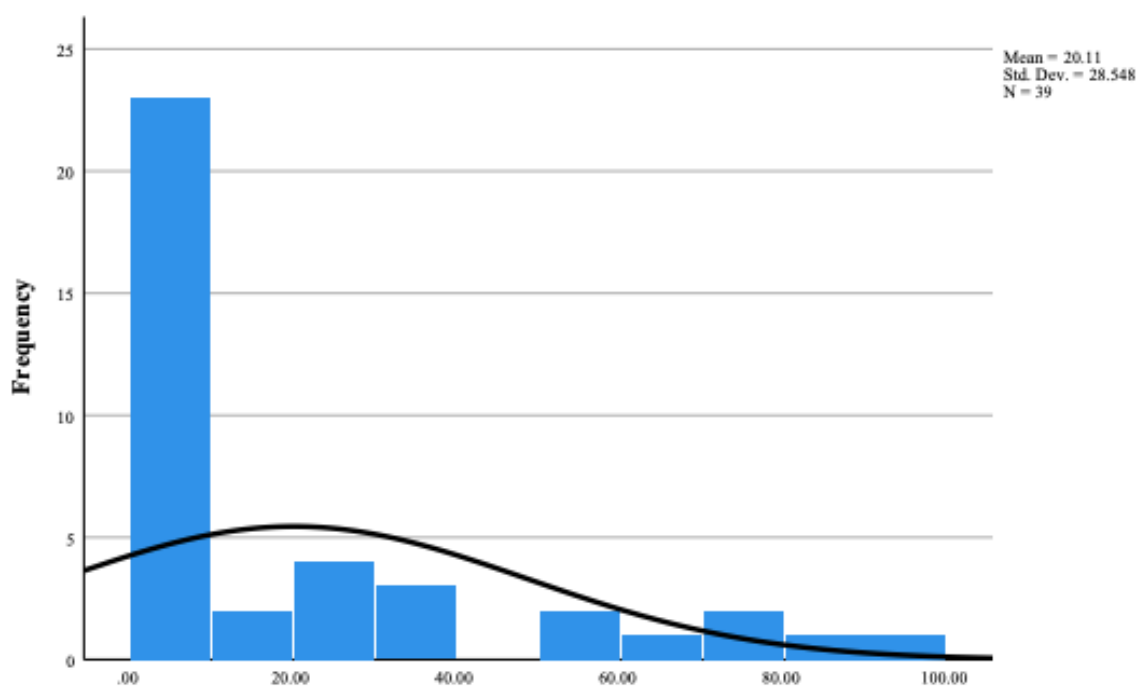
Sub Aim 4: To What Degree Does Instrumental Support Account for Interprofessional Burnout

Due to the small sample size and the significant skew of the betweenness scores, Spearman's rank correlation was calculated using bootstrapping methods. Spearman's rank-order correlation is used for nonparametric data and measures the strength and direction of association between two ranked variables. Bootstrapping methods are used with a smaller sample to resample a single dataset to create many simulated samples instead of rerunning the study with a larger sample size. This decreases the risk of a Type I error. As shown in Table 8, the three subscales of burnout did not significantly correlate with instrumental betweenness scores. The correlation between EE and betweenness was weak and insignificant ($r_s = 0.08$, $p > 0.05$, 95% CI [-0.22, 0.39]). The correlation between DP and betweenness was weak and insignificant ($r_s =$

-0.07, $p > 0.05$, 95% CI [-0.31, 0.34]). The correlation between PA and betweenness was weak and insignificant ($r_s = -0.18$, $p > 0.05$, 95% CI [-0.48, 0.15]). This indicates that there is no significant association between burnout and instrumental betweenness, which means that as an individual diffused more instrumental social support, there was no significant change in burnout subscale scores.

Data were also analyzed using sociograms. The following sociograms describe the degree to which individuals who are providing instrumental support (i.e., high betweenness score) are also experiencing different aspects of burnout (see Figures 20-22). The size of the node indicates the degree to which that an individual is responsible for the diffusion of emotional support. A larger sized node indicates a higher betweenness score. The prior calculated high, medium, and low cut-off scores for each subscale of burnout were used to color code individual nodes for visualization of unit levels of burnout scores. Color coding was used to visualize the degree of burnout as high (red), medium (orange), and low (yellow). Reverse color coding was used for personal accomplishment scores. High levels of personal accomplishment indicate that an individual is not experiencing burnout with low (red), medium (orange), and high (yellow) (see Figure 22). As shown in Figure 20 many of the participants who are responsible for diffusing instrumental support are also experiencing high levels of emotional exhaustion (see Figure 19).

Figure 20. Sociogram Describing Instrumental Social Support/Emotional Exhaustion Subscale of Burnout
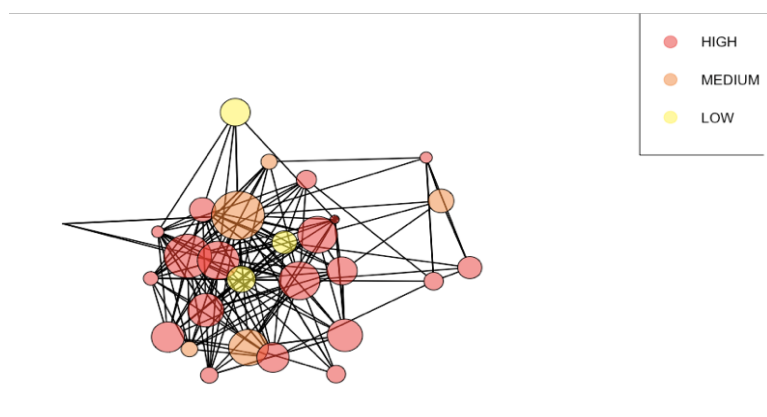
As shown in Figure 21 many of the participants who are responsible for diffusing instrumental

support are experiencing medium levels of depersonalization.

Figure 21. Sociogram Describing Instrumental Social Support/Depersonalization Subscale of Burnout
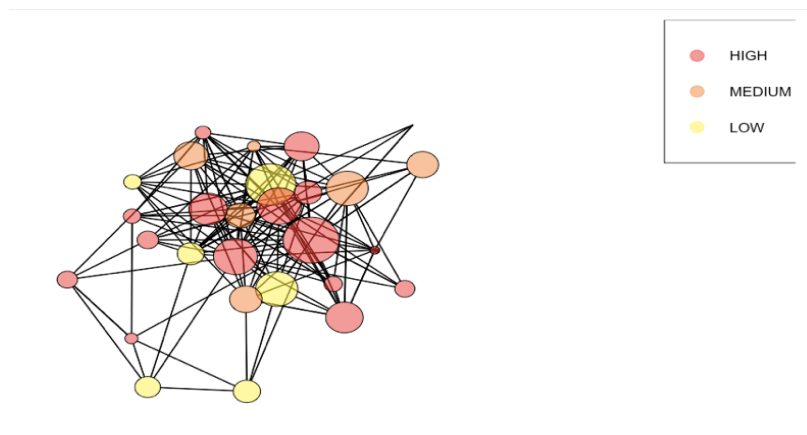
As shown in Figure 22 many of the participants who are responsible for diffusing

instrumental support were experiencing high levels of personal accomplishment. According to

Maslach's multidimensional theory of burnout, the individuals on this unit were progressing to

the end stage of burnout but were not currently at an end stage. Maslach's multidimensional theory of burnout proposes that emotional exhaustion will develop first. It is unclear in the theory if depersonalization and personal accomplishment scores will develop in a linear or concurrent manner. This unit had high levels of emotional exhaustion, meaning that the unit is in the process of developing burnout. However, the lower scores for depersonalization and high scores of personal accomplishment indicated that the unit has not reached the end stage of burnout.

Figure 22. Sociogram Describing Instrumental Social Support/Personal Accomplishment Subscale of Burnout
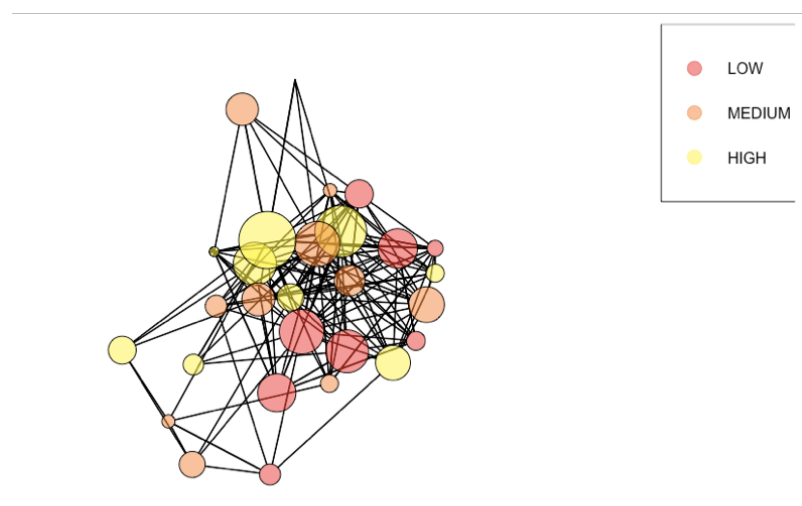

Sub Aim 5: To What Degree Does Emotional Support Account for Interprofessional Provider Burnout

Due to the small sample size and the significant skew of the betweenness scores, Spearman's rank correlation was calculated using bootstrapping methods. Table 8 displays the Spearman correlation for selected variables with burnout scores. The correlation was not significant for any of the three burnout subscales. The correlation between EE and betweenness was weak and insignificant (r_s = -0.07, $p > 0.05$, 95% CI [-0.32, 0.31]). The correlation between

DP and betweenness was weak and insignificant ($r_s = 0.04$, $p > 0.05$, 95% CI [-0.30, 0.38]). The correlation between PA and betweenness was weak and insignificant ($r_s = -0.28$, $p > 0.05$, 95% CI [-0.60, 0.07]). This indicates that there is no statistically significant relationship between emotional support betweenness and burnout (see Table 8). This means that as an individual gave (diffused) more emotional social support, there was no significant change in burnout subscale scores.

Data were also analyzed using sociograms. The following sociograms describe the degree to which individuals who are providing emotional support (i.e., high betweenness score) were also experiencing different aspects of burnout (see Figures 23-25). Similar color coding from the other sociograms was used for the subscales of emotional exhaustion and depersonalization. Inverse color coding was used to depict depersonalization scores (see Figure 24). As shown in Figure 22 many of the participants who were responsible for diffusing emotional support were also experiencing high levels of emotional exhaustion (see Figure 23). As shown in Figure 24 many of the participants who were responsible for diffusing emotional support were experiencing medium levels of depersonalization. As shown in Figure 25 many of the participants who were responsible for diffusing emotional support were experiencing high levels of personal accomplishment. According to Maslach's multidimensional theory of burnout, the high emotional exhaustion scores indicates that individuals on this unit were progressing to burnout, but the medium levels of depersonalization and high levels of personal accomplishment indicate that the participants are not currently at an end stage.

Figure 23. Sociogram Describing Emotional Social Support/Emotional Exhaustion Subscale of Burnout
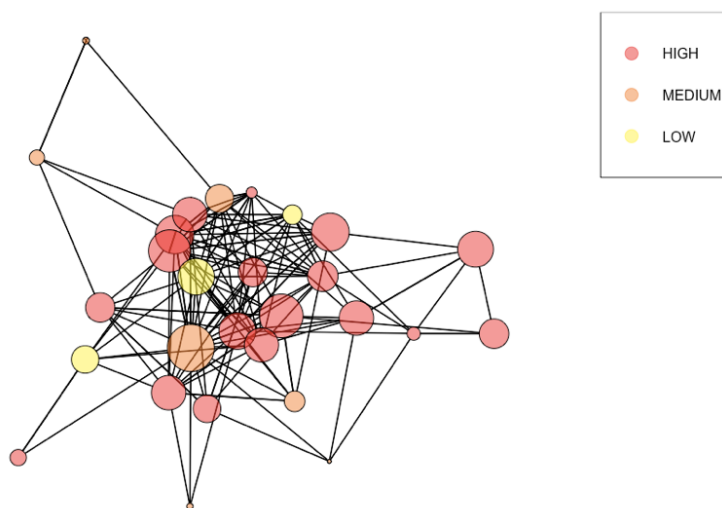
Figure 24. Sociogram Describing Emotional Social Support/Depersonalization Subscale of Burnout
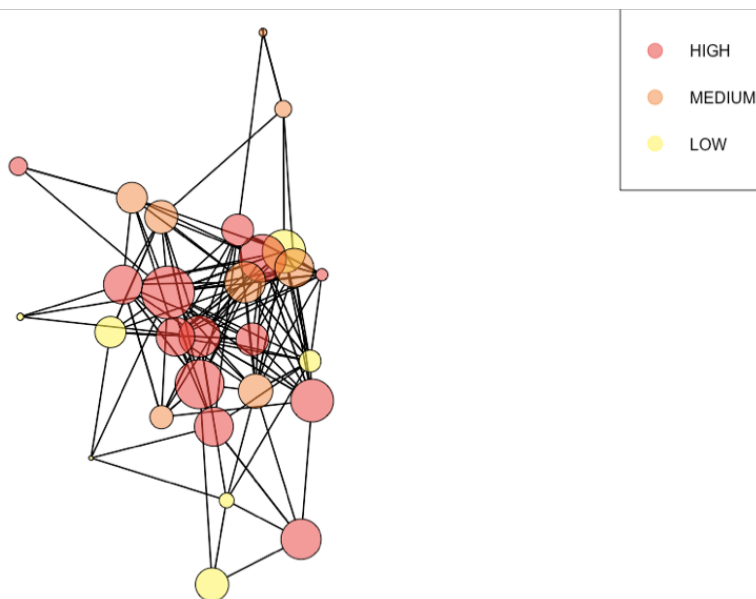
Figure 25. Sociogram Describing Emotional Social Support/Personal Accomplishment Subscale of Burnout
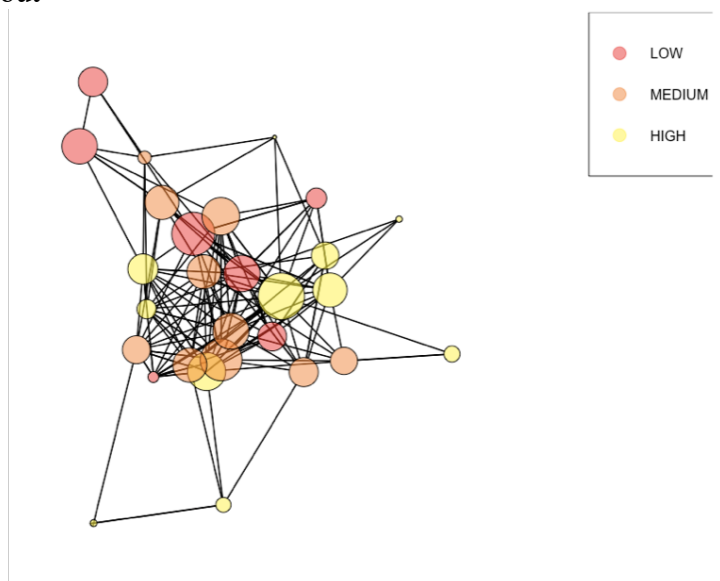
Sub Aim 6: To What Degree Does Informational Support Account for Interprofessional Provider Burnout

Due to the small sample size and the significant skew of the betweenness scores, Spearman's rank correlation was calculated using bootstrapping methods. Table 8 displays the Spearman correlation for informational support with the three burnout scores. The correlation was not significant for any of the three burnout subscales (see Table 8). The correlation between EE and betweenness was weak and insignificant ($r_s = 0.04$, $p > 0.05$, 95% CI [-0.39, 0.22]). The correlation between DP and betweenness was weak and insignificant ($r_s = 0.04$, $p > 0.05$, 95% CI [-0.30, 0.35]). The correlation between PA and betweenness was weak and insignificant ($r_s = -0.1$, $p > 0.05$, 95% CI [-0.46, 0.28]). This indicates that there is no association between burnout and informational betweenness. As an individual diffused more informational social support, there was no significant change in burnout subscale scores.

Data were also analyzed using sociograms to determine the degree of burnout at a unit

level. The following sociograms describe the degree to which individuals who are providing

informational support (i.e., high betweenness score) are also experiencing different aspects of

burnout (see Figures 26-28). The size of the node indicates the degree to which that the

individual is responsible for the diffusion of emotional support. A larger sized node indicates a

higher betweenness score. Cut-off scores for each burnout subscale were calculated and colors

were used to better visualize burnout at a unit level. The color of the node (red, orange, yellow)

indicates the level of MBI subscale scores. The same color coding was used to depict emotional

exhaustion and depersonalization scores (see Figures 26-27). The inverse color coding was used

for personal accomplishment to consistently demonstrate that red was least desirable and yellow

was most desirable (see Figure 26). As shown in Figure 26 many of the participants who were

responsible for diffusing informational support were also experiencing high levels of emotional

exhaustion (see Figure 26). As shown in Figure 27 many of the participants who were

responsible for diffusing informational support were experiencing medium levels of

depersonalization. As shown in Figure 28 many of the participants who were responsible for

diffusing informational support were experiencing high levels of personal accomplishment.

Individuals on this unit were at a high risk for developing burnout based on the high emotional

exhaustion scores. The participants had not reached the final end stage of burnout based on the

medium levels of depersonalization and the high levels of personal accomplishment.

Figure 26. Sociogram Describing Informational Social Support/Emotional Exhaustion Subscale of Burnout
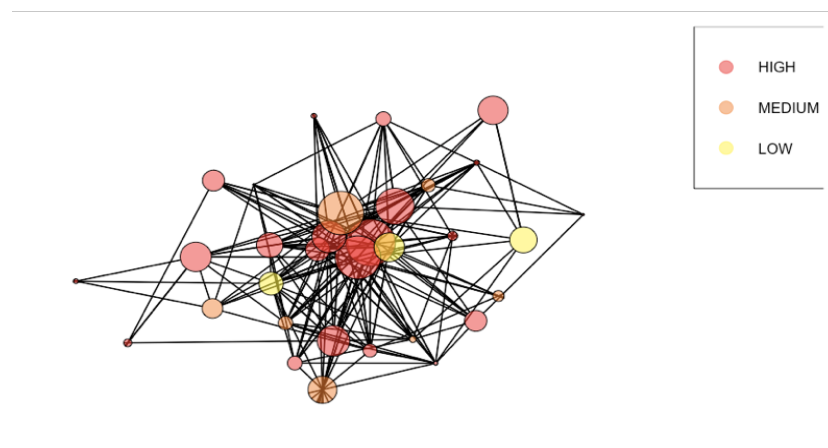
Figure 27. Sociogram Describing Informational Social Support/Depersonalization Subscale of Burnout

.
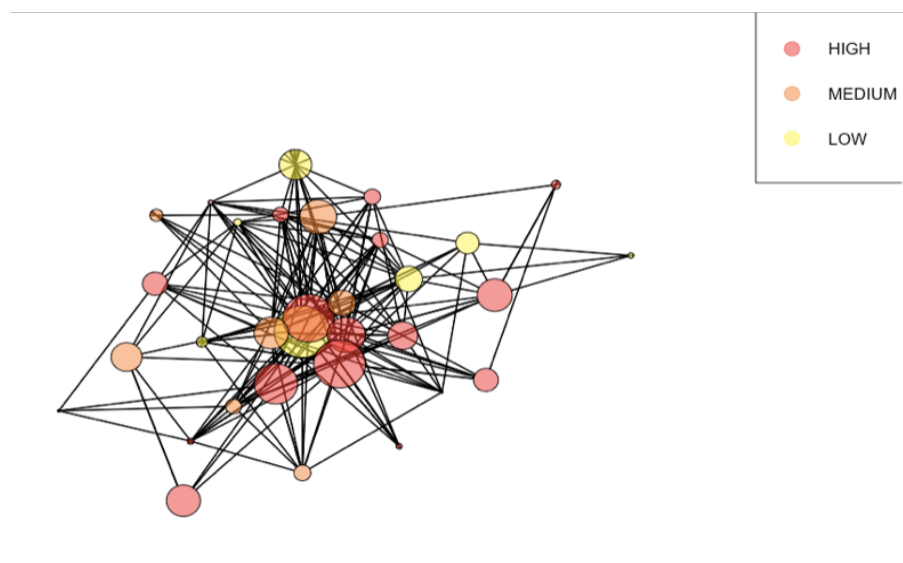
Figure 28. Sociogram Describing Informational Social Support/Personal Accomplishment Subscale of Burnout
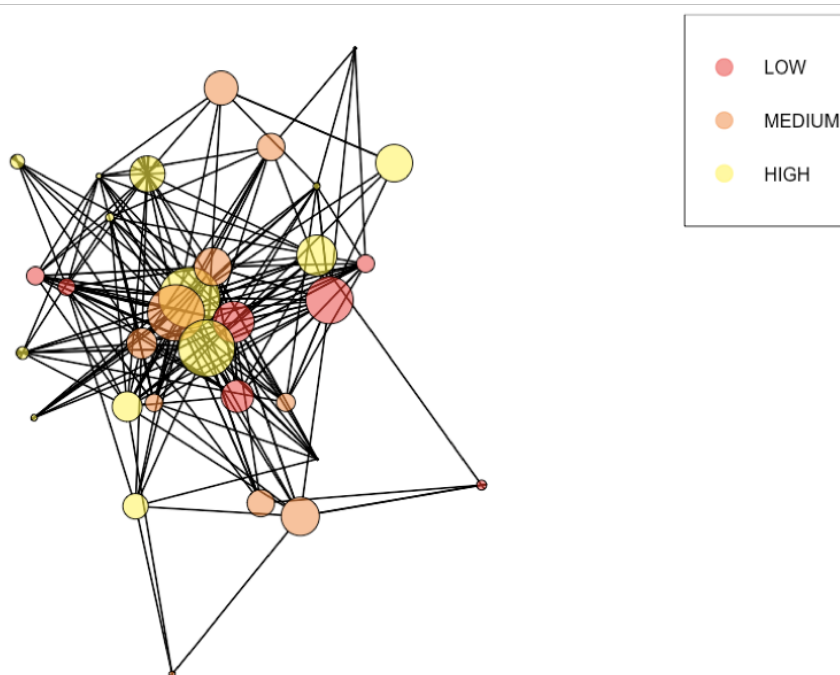
Sub Aim 7: To What Degree Does Advice-Seeking Support Account for Interprofessional Provider Burnout

Due to the small sample size and the significant skew of the betweenness scores, Spearman's rank correlation was calculated using bootstrapping methods. Table 8 displays the Spearman correlation for advice-seeking with the three burnout scores. One of the three correlations was significant. Specifically, advice-seeking support had a moderate negative relationship to personal accomplishment, r_s = -0.35, $p < .01$, 95% CI [-0.65, -0.04]. The correlation between EE and betweenness was weak and insignificant (r_s = -0.09, $p > 0.05$, 95% CI [-0.39, 0.22]). The correlation between DP and betweenness was weak and insignificant (r_s = -0.04, $p > 0.05$, 95% CI [-0.30, 0.35]). This indicates that there was no association between emotional exhaustion and instrumental betweenness, there was no association between

depersonalization and advice-seeking betweenness. There was a weak to moderate relationship between personal accomplishment and advice-seeking betweenness. Which means that as advice-seeking betweenness increased, there was no significant change to emotional exhaustion or depersonalization scores. As advice-seeking betweenness increased personal accomplishment scores also increased.

Data were also analyzed using sociograms. The following sociograms describe the degree to which individuals who are providing advice-seeking support (i.e., high betweenness score) are also experiencing different aspects of burnout (see Figures 29-31). The size of the node indicates the degree to which that individual is responsible for the diffusion of emotional support. A larger sized node indicates a higher betweenness score. Cut-off scores for each burnout subscale were calculated and colors were used to better visualize burnout at a unit level. The same color coding was used to depict emotional exhaustion and depersonalization scores (see Figures 29-30). Inverse color coding was used to depict personal accomplishment scores (see Figure 31). As shown in Figure 28 many of the participants who were responsible for diffusing emotional support were also experiencing high levels of emotional exhaustion (see Figure 29). As shown in Figure 30 many of the participants who were responsible for diffusing advice-seeking support were experiencing high levels of depersonalization. As shown in Figure 31 many of the participants who were responsible for diffusing advice-seeking support were experiencing medium levels of personal accomplishment. According to Maslach's multidimensional theory of burnout, the individuals on this unit were progressing to the end stage of burnout but were not currently at an end stage. The high levels of emotional exhaustion indicated a high risk of

burnout for this unit, but the high levels of depersonalization and medium levels of personal accomplishment indicate that the unit had not reached the end stage of burnout.

Figure 29. Sociogram Describing Advice-Seeking Social Support/Emotional Exhaustion Subscale of Burnout
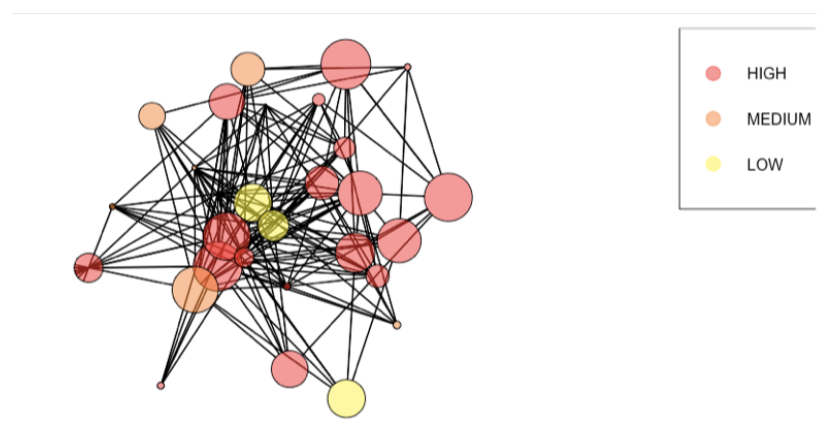
Figure 30. Sociogram Describing Advice-Seeking Social Support and Depersonalization Subscale of Burnout
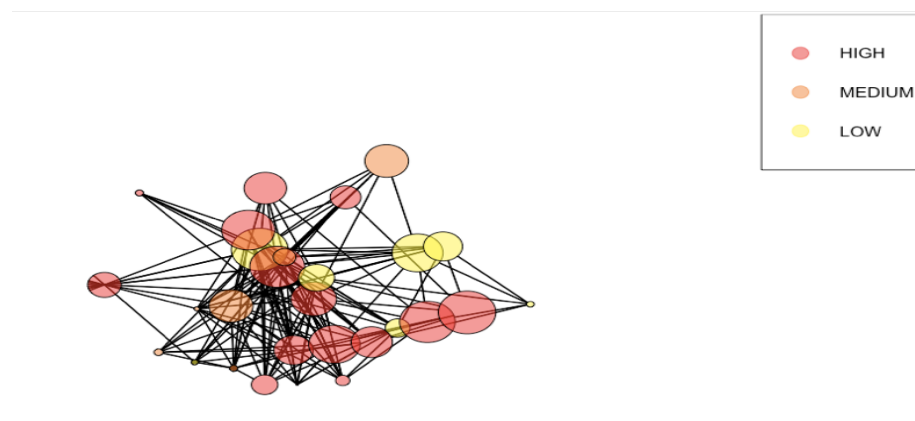
Figure 31. Sociogram Describing Advice-Seeking Social Support/Personal Accomplishment Subscale of Burnout
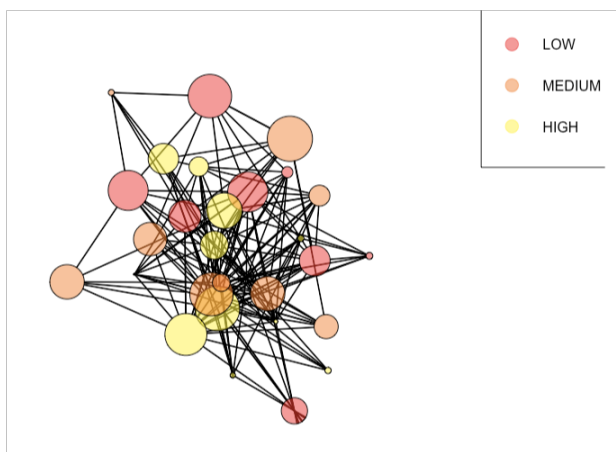
Sub Aim 8: To What Degree Does Collective Efficacy Account for Interprofessional Provider Burnout

Table 8 displays the Spearman correlation for collective efficacy with the three burnout scores. The correlation was significant for each of the three subscales. Specifically, a strong negative correlation was found with emotional exhaustion, $r_s = -0.57$, $p < .001$, 95% CI [-0.75, -0.33]. Also, a strong positive correlation was found with personal accomplishment $r_s = 0.50$, $p < .001$, 95% CI [0.23, 0.71]. For collective efficacy and depersonalization, the correlation just failed to reach significance, $r_s = -0.31$, $p < 0.10$, 95% CI [-0.60, 0.06]. With a p-value above 0.05, and a 95% confidence interval including zero, these results should be interpreted that a weak and insignificant correlation was present between collective efficacy and depersonalization. These results indicate that there is no statistically significant correlation between collective efficacy and depersonalization. These results indicate a strong negative correlation with emotional exhaustion, and a strong positive correlation with personal accomplishment. The higher the individual

perception of collective efficacy on the unit, the lower the individual's score for emotional exhaustion. The higher the individual perception of collective efficacy on the unit, the higher the individual's score for personal accomplishment.

Data were also analyzed using sociograms. The following sociograms describe the degree to which individuals who were providing emotional support (i.e., high betweenness score) were also experiencing collective efficacy (see Figures 32-35). The size of the node indicates the degree to which that individual was responsible for the diffusion of emotional support. Cut-off scores for collective efficacy were calculated and colors were used to better visualize collective efficacy at a unit level. Color coding was used to visualize the degree of collective efficacy as low (red), medium (orange), and high (yellow). High levels of collective efficacy indicate that an individual perceives collective efficacy is present on the unit. (see Figure 32). As shown in Figure 32 many of the participants who were responsible for diffusing instrumental support also perceived a high level of collective efficacy (see Figure 31). As shown in Figure 33 many of the participants who were responsible for diffusing emotional support also perceived a high level of collective efficacy (see Figure 33). As shown in Figure 34 many of the participants who were responsible for diffusing informational support perceived high levels of collective efficacy were present on the unit. As shown in Figure 35 many of the participants who were responsible for diffusing advice-seeking social support perceived high levels of collective efficacy on the unit. The visual interpretation of all four sociograms indicated that individuals who were responsible for diffusing all four types of social support also perceived high levels of collective efficacy were present on the unit.

Figure 32. Sociogram Describing Instrumental Social Support/Collective Efficacy
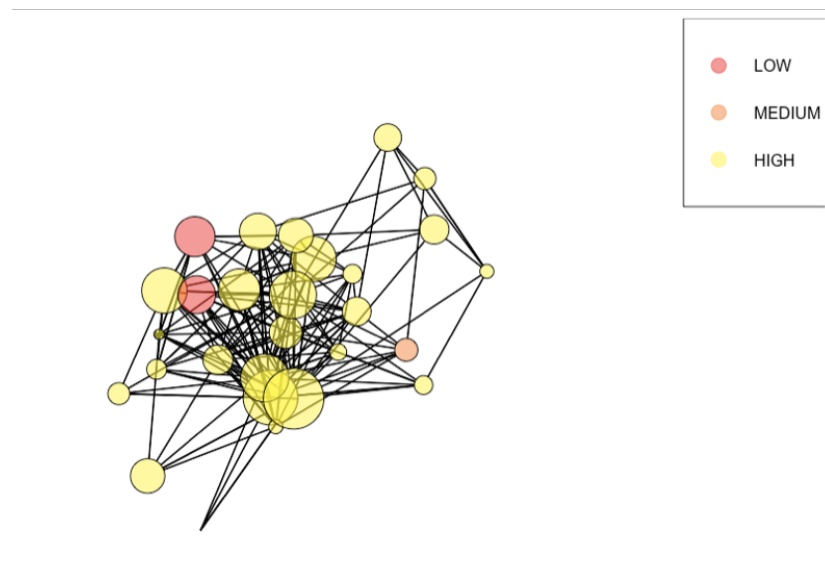
Figure 33. Sociogram Describing Emotional Social Support/Collective Efficacy
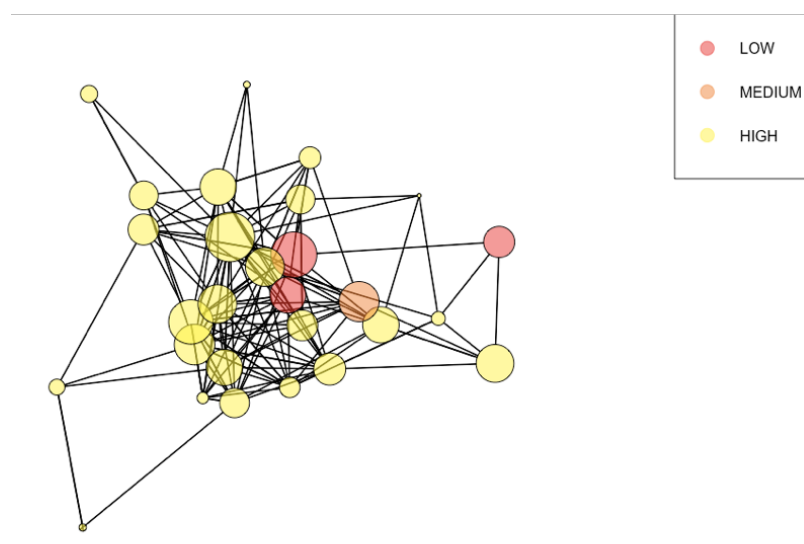
Figure 34. Sociogram Describing Informational Social Support/Collective Efficacy
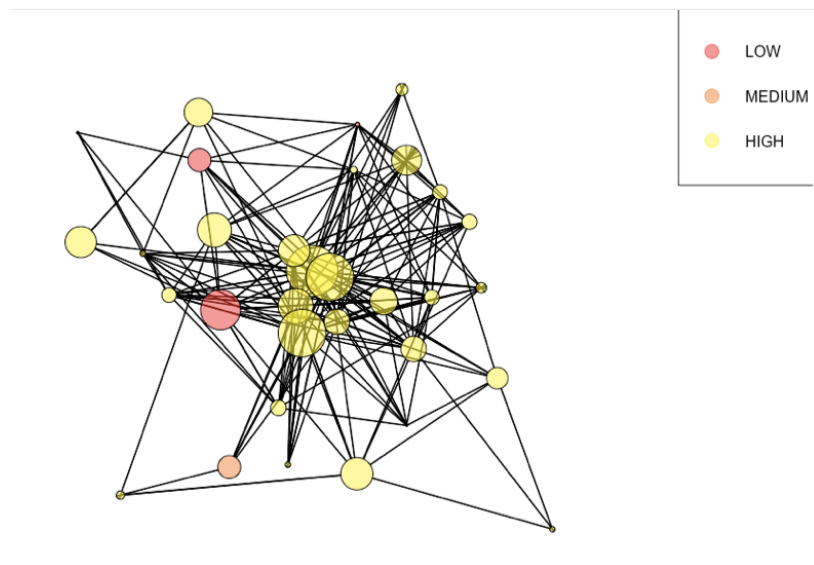
Figure 35. Sociogram Describing Advice-Seeking Social Support/Collective Efficacy
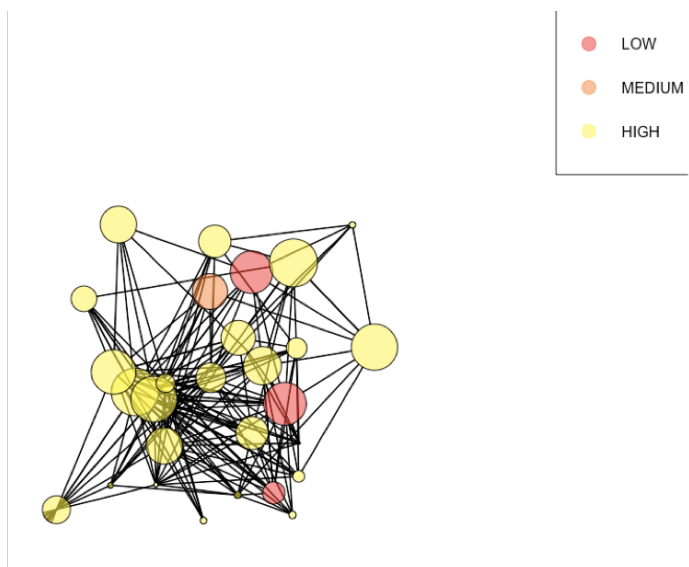
Table 8. Description of Correlations with Social Support (Emotional, Instrumental, Informational, Advice-Seeking, Collective Efficacy and Burnout)

	Maslach Burnout Inventory					
	Emotional Exhaustion Subscale		Depersonalization Subscale		Personal Accomplishment Subscale	
	Spearman's Rho (95% CI)	p-value	Spearman's Rho (95% CI)	p- value	Spearman's Rho (95% CI)	p- value
Support Betweenness						
Emotional	-0.07 (-0.32, 0.31)	0.96	0.04 (-0.30, 0.38)	0.83	-0.28 (-0.60, 0.07)	0.09
Instrumental	0.08 (-0.22, 0.39)	0.62	0.07 (-0.31, 0.34)	0.97	-0.18 (-0.48, 0.15)	0.28
Informational	0.04 (-0.27, -0.35)	0.81	0.06 (-0.30, 0.36)	0.71	-0.1 (-0.46, 0.28)	0.53
Advice-Seeking	-0.09 (-0.39, 0.22)	0.6	0.04 (-0.30, 0.35)	0.82	-0.35 (-0.65, -0.04)	0.03
Collective Efficacy	-0.57 (-0.75, -0.33)	< 0.001	-0.31 (-0.6, 0.06)	0.06	0.5 (0.23, 0.71)	0.09

Sub Aim 9: Determine to What Degree Collective Efficacy and the Social Support(s) Predict Burnout

A backward stepwise linear regression was used to identify possible predictors of burnout out of the following seven candidate variables: age, years of experience, collective efficacy, emotional social support, informational social support, instrumental social support, and advice-seeking social support. At each step, variables were chose based on p-values, and a p-value threshold of 0.1 was used to set a limit on the total number of variables included in the final model. At each step, the variable that had the lowest correlation with the dependent variable (burnout) was removed from the model. The final model contained variables that satisfied the elimination criterion (i.e., all variables in the model had a p-value of < 0.1).

Emotional exhaustion. Starting with 7 variables that might theoretically be good predictors of the emotional exhaustion subscale of burnout, a backward stepwise logistic regression model was able to reduce them to one, which was collective efficacy (see Table 9). The first model contained all seven variables. The first variable removed was emotional support. The second variable removed was age. The third variable removed was experience. Advice-seeking social support was eliminated in the fourth model. Instrumental social support was removed in the fifth model.

Table 9. Seven Regression Models Predicting Emotional Exhaustion Among a Sample of Direct Patient Care Workers in an ICU

Predictors	Model 1 $R^2 = 0.347$			Model 2 $R^2 = 0.343$			Model 3 $R^2 = 0.337$			Model 4 $R^2 = 0.327$		
	β	t	p	β	t	p	β	t	p	β	t	p
Collective Efficacy	-0.533	-2.86	0.008	-0.551	-3.06	0.004	-0.6	-3.98	<0.001	-0.578	-3.95	<0.001
Informational Support	0.458	1.429	0.163	0.461	1.45	0.156	0.471	1.51	0.142	0.399	1.36	0.183
Instrumental Support	-0.295	-1.03	0.313	-0.228	-0.92	0.364	-0.233	-0.95	0.35	-0.252	-1.043	0.304
Advice-Seeking support	-0.263	-1.05	0.301	-0.198	-0.96	0.345	-0.20	-0.99	0.33	-0.164	-0.84	0.41
Years of Experience	-0.284	-0.87	0.393	-0.264	-0.823	0.42	-0.121	-0.705	0.486			
Age	0.181	0.546	0.59	0.174	0.53	0.599						
Emotional Support	0.139	0.475	0.638									

Note. β = standardized beta.

Table 9 [cont.]

Seven Regression Models Predicting Emotional Exhaustion Among a Sample of Direct Patient Care Workers in an ICU

Predictors	Model 5 $R^2 = 0.313$			Model 6 $R^2 = 0.296$			Model 7 $R^2 = 0.290$		
	β	*T*	p	β	*t*	p	β	*t*	P
Collective Efficacy	-0.558	-3.88	< 0.001	-0.56	-3.88	< 0.001	-0.538	-3.89	< 0.001
Informational Support	0.259	1.08	0.28	0.79	0.55	0.583			
Instrumental Support	-0.22	-0.93	0.36						
Advice-Seeking support									
Years of Experience									
Age									
Emotional Support									

Note. β = standardized beta.

Finally, informational social support was removed leaving only collective efficacy reaching the satisfying criterion. Age, experience, and social supports (emotional, informational, instrumental, and advice-seeking) failed to reach significance set at a 0.1 level. Collective efficacy accounted for 29.0% ($p = .001$) of the variance for emotional exhaustion. Collective efficacy was negatively related to emotional exhaustion ($\beta = -0.54$, $p = .001$) (see Table 10).

Table 10. Multiple Regression Results for Emotional Exhaustion Subscale of Burnout

Variable	B	SE	β	t	p
Intercept	64.35	7.95		8.09	.001
Collective Efficacy	-6.88	1.77	-0.54	-3.89	.001

Note. Final model: $F (1, 37) = 15.10$, $p = .001$. $R^2 = .290$.

Depersonalization. Starting with 7 variables that might theoretically be good predictors of the depersonalization subscale of burnout, a backward stepwise logistic regression model was able to reduce them to one which was collective efficacy (see Table 11). The first model contained all seven variables. Informational support was removed in the first model, the next model removed advice-seeking social support. The fourth model moved instrumental social support. The fifth model removed age. The sixth model removed years of experience. The seventh model removed the final variable of emotional social support. None of the seven variables reached the satisfying criteria to explain the dependent variable of depersonalization subscale of burnout.

Table 11. Seven Regression Models Predicting Depersonalization Among a Sample of Direct Patient Care Workers in an ICU

Predictors	Model 1 $R^2 = 0.360$			Model 2 $R^2 = 0.358$			Model 3 $R^2 = 0.356$			Model 4 $R^2 = 0.347$		
	β	T	p	β	t	p	β	t	p	β	t	p
Collective Efficacy	-0.204	-0.95	-.351	-0.192	-0.936	0.356	-0.197	-0.979	0.335	-0.224	-1.17	0.25
Emotional Support	0.328	0.974	0.338	0.329	0.992	0.329	0.273	1.089	0.284	0.186	1.058	0.297
Years of Experience	-0.261	-0.69	0.496	-0.251	-0.677	0.503	-0.24	-0.661	0.513	-0.261	-0.733	0.47
Age	0.223	0.582	0.565	0.228	0.606	0.549	0.225	0.608	0.547	0.220	0.601	0.552
Instrumental Support	-0.178	-0.54	0.595	-0.137	-0.510	0.614	-0.130	-0.493	0.63			
Advice-seeking Support	-0.96	-0.33	0.741	-0.065	-0.263	0.794						
Informational Support	0.80	0.217	0.830									

Note. β = standardized beta.

Table 11 [cont.]

Seven Regression Models Predicting Depersonalization Among a Sample of Direct Patient Care Workers in an ICU

Predictors	Model 5 $R^2 = 0.333$			Model 6 $R^2 = 0.326$			Model 7 $R^2 = 0.287$		
	β	*t*	p	β	*t*	p	β	*t*	p
Collective Efficacy	-0.286	-1.79	0.081	-0.287	-1.79	0.081	-0.287	-1.83	0.076
Emotional Support	0.183	1.052	0.30	0.153	0.97	0.338			
Years of Experience	-0.08	-0.43	0.67						
Age									
Instrumental Support									
Advice-seeking Support									
Informational Support									

Note. β = standardized beta.

Personal accomplishment. For personal accomplishment, collective efficacy was significant (p = .002) and accounted for 23.1% of the variance. Collective efficacy was positively related to personal accomplishment (β = .48, p = .002) (see Table 12).

Table 12. Multiple Regression Results for Personal Accomplishment Subscale of Burnout

Variable	*B*	*SE*	β	*t*	*p*
Collective Efficacy	4.28	1.28	0.48	3.34	.002

Note. Final model: $F(1, 37) = 11.14$, $p = .002$. $R^2 = .231$.

The relationship between collective efficacy and emotional exhaustion was statistically significant, with collective efficacy, explaining 29% of the variance. The relationship between collective efficacy and personal accomplishment was statistically significant, explaining 23.1% of the variance. Starting with 7 variables that might theoretically be good predictors of the personal accomplishment subscale of burnout, a backward stepwise logistic regression model was able to reduce them to one which was collective efficacy (see Table 12). The first model contained all seven variables, after which instrumental social support was removed. After the second model, years of experience was removed. Age was removed from the fourth model. Emotional social support was removed from the fifth model. Informational support was removed from the fifth model. Advice-seeking social support was the final variable removed that did not meet the required criteria. (see Table 13).

Table 13. Six Regression Models Predicting Personal Accomplishment Among a Sample of Direct Patient Care Workers in an ICU

Predictors	Model 1 $R^2 = 0.574$			Model 2 $R^2 = 0.574$			Model 3 $R^2 = 0.573$			Model 4 $R^2 = 0.572$		
	β	t	P	β	t	p	β	t	p	β	t	p
Collective Efficacy	0.381	2.014	0.053	0.381	2.056	0.048	0.391	2.295	0.028	0.398	2.397	0.022
Advice-Seeking Support	-0.403	-1.59	0.122	-0.407	-1.744	0.091	-0.413	-1.825	0.077	-0.438	-2.195	0.035
Informational Support	0.328	1.009	0.321	0.337	1.278	0.211	0.343	1.338	0.190	0.315	1.389	0.174
Age	-0.120	-0.39	0.723	-0.121	-0.364	0.718	-0.081	-0.458	0.650	-0.086	-0.502	0.619
Emotional Support	-0.073	-0.25	0.807	-0.066	-0.261	0.796	-0.061	-0.245	0.808			
Years of Experience	0.046	0.140	0.890	0.047	0.143	0.887						
Instrumental Support	0.014	0.047	0.963									

Table 13 [cont.]

Six Regression Models Predicting Personal Accomplishment Among a Sample of Direct Patient Care Workers in an ICU

Predictors	Model 5 R² = 0.568			Model 6 R² = 0.537		
	β	t	p	β	t	p
Collective Efficacy	0.437	3.026	0.005	0.489	3.474	0.001
Advice-Seeking Support	-0.412	-2.16	0.038	-0.239	-1.70	0.098
Informational Support	0.259	1.326	0.193			
Age						
Emotional Support						
Years of Experience						
Instrumental Support						

CHAPTER FIVE

DISCUSSION

The overall aim of this descriptive study was to explore what relationships exist between burnout, collective efficacy, and the social network of interprofessional providers at the unit level. This chapter will first discuss the strengths and limitations of the study. This will be followed by a presentation of the key findings of each study sub-aim related to burnout, collective efficacy, and the social supports (emotional, instrumental, informational, and advice-seeking) and their convergence or divergence with the extant literature. The implications for nursing practice, policy, administration, and education based on the research results will be discussed. Finally, future recommendations for further research will be presented.

Limitations of the Study

Design

This study is not without its limitations. The use of SNA methods and a cross-sectional design make it difficult to propose causal claims regarding the different variables of interest. Since this was a cross-sectional correlational design, no causal relationships could be established. However, the results identified a strong negative correlation between collective efficacy and the development of emotional exhaustion, and a strong positive correlation between collective efficacy and the development of personal accomplishment, thereby adding valuable knowledge regarding the development of burnout in ICU direct-patient care workers.

Sample Bias

The 80% response rate is acceptable for SNA methods, but still misses 20% of potential respondents. This may have also led to bias in the study by not reaching 100% of possible participants. Caution must also be utilized when reviewing the results, as participants may have created response bias for burnout measures since the respondents might not be experiencing higher levels of burnout.

The method used for this study limited the number of participants available to participate in the study. A large effect size was met for both tools with a sample size of 38. The large effect size and statistical significance for collective efficacy indicates results that have a practical significance. For the concept of burnout, the sample size was enough to have a large effect, but the results were not significant. This could be due to the small sample size. This limitation occurred due to the limited number of direct patient care workers that met the inclusion criteria for participants. The insignificant results could also be explained by the multiple variables that effect burnout in direct patient care workers, or that burnout is greatly affected by the individual participants. However, sociometry further described relationships between the concepts and there were adequate participants for sociometry.

A whole network, census-based design was used for participants to select individuals that they felt social support types from. This is a limitation since this portion was the final section of the survey. Participants may have felt survey fatigue by this point of the survey and under-selected individuals from whom they perceive support.

Internal Validity and External Validity

Another threat to internal validity was instrumentation. The use of an on-line self-report survey tool relies on honest reporting and an accurate self-assessment. It is impossible for the researcher to know if study participants gave an over or under-estimated response on level of burnout or collective efficacy. A thorough review of current literature and careful process was completed prior to the selection of instruments used for data collection in this study as discussed in chapter 3. Therefore, reliability was established for each tool used in the study.

Using social network analysis methods, and a convenience sample, selection bias, is a threat to external validity by reducing the generalizability to the general population. The sample used was asked whole network question, which required respondents to belong to the same group to meet whole network assumptions. Whole network research cannot be generalized to general populations (Scott, 2017). Caution must also be utilized when reviewing the results regarding generalizability to a larger population. Generalizability is not a goal of social network analysis methods (Scott, 2017).

Strengths of this Study

Unit-Based Research

There are significant strengths to this study. This study is an important contribution to the burnout literature because it used a network approach to investigate the development of burnout. Most studies to date have only considered individual risk factors related to burnout (Dall'Ora et al., 2020). To the best of our knowledge, this study was the first to use whole network analysis to understand burnout at a unit-based level among interprofessional direct-care workers.

Theoretical Framework and Tools

Strengths of this study included the fact that it was grounded in both extant literature and theory. Maslach's Multidimensional Theory of Burnout is not the theory used as the theoretical framework for burnout research. The results of this study support and further expand this theory by supporting burnout as a continuum between the effective and ineffective worker. The two tools selected for use in this study have strong psychometric properties. The MBI tool used to measure burnout is a valid and reliable tool as discussed in Chapter Three. This tool is the most widely used tool in burnout research, but most research does not use the tool as it is intended with reporting all three subscales (Woo et al., 2020). The findings of this study expanded the knowledge of burnout and the development of burnout among direct patient care workers. The Collective Efficacy Beliefs Tool had been used in educational research (Huh et al., 2014). This tool had not been widely used in nursing research; these findings expand the knowledge of direct-patient care workers perception of collective efficacy.

A whole network census-based list for participants to select individuals eliminates recency bias in social network analysis studies. An open-ended question could lead participants to name individuals that either do not work on the unit, or only name individuals they recently worked with. This way of creating a sociogram eliminates recency bias and increases the validity of the network created.

Participants

Another strength of this study is the participants that were included. The sample population closely matched the nursing population within the United States (HRSA, 2019). The

sample size was 80% of the possible participants on the unit, which adds validity and decreases selection bias. The sample size (*n*=39) reached power to exhibit a large effect size. The sample for this study was interprofessional and included at least one participant from every available healthcare practitioner that worked on the unit.

Burnout

The purpose of this aim was to describe burnout on the unit. Results from the study support Maslach's Multidimensional Theory of burnout. This study further supported using the MBI with reporting all three subscales as individual scores. Results of this study will be discussed with what was found at the individual level and at the unit-based level and comparing to extant data.

Burnout at an individual level. The direct patient care workers on this unit experienced high levels of emotional exhaustion (EE), but moderate to low levels of depersonalization (DP) with moderate to high levels of personal accomplishment (PA). Overall, this demonstrates a congruency with Maslach's multidimensional theory of burnout (1998) where emotional exhaustion is the first stage of burnout. A worker is not considered to be experiencing burnout unless they score high in EE, high in DP and low in PA. Overall this unit demonstrated that they are progressing to the result of burnout, but at the time of data collection (August 2021) the unit was not at the end stage of burnout. The MBI is estimated to be used in over 90% of worldwide burnout research (Maslach, 2017). However, many researchers do not report individual subscale scores and report only the EE subscale score for participants. A meta-analysis (Dall'Ora, 2020) of 81 studies revealed that less than half (47%) of reviewed studies reported results with all three

subscales. Twenty-three papers used the EE scale only, 11 papers used the EE and DP subscales, and 9 studies provided a composite score of burnout (Dall'Ora, 2020). This study reveals the importance of evaluating burnout using all three subscale scores to fully assess where participants are in their development of burnout. It is still unclear if depersonalization and personal accomplishment develop in a linear or concurrent manner. More research is needed to explore the sequence in developing burnout.

Extant research uses the MBI to assess individual risk of burnout. The MBI is meant to be used for self-assessment. The validity of the MBI does not reach appropriate strength to be used as a diagnostic tool (Wheeler et al., 2018). Results of this study suggest that the MBI may also be used to assess a group of individuals, or an entire patient care unit. Administrators could use the MBI to assess the unit to use research-based interventions to buffer the development of burnout prior to HCPs reaching the end stage. Prior research has focused on interventions directed at the individual level (Hilcove et al., 2020; Nowrouzi et al., 2015). Self-care strategies, such as yoga and mindfulness meditation, have been identified as beneficial in mitigating the development of burnout (Chamberlain et al., 2017; Chesak et al., 2019). Unit-based interventions such as increasing interpersonal connections were identified as mitigating the development of burnout (Wei et al., 2017). Bundled strategy interventions that include individual-focused, structural, and organizational level interventions have been successful since burnout is a complicated and multidimensional syndrome (Zhang et al., 2020). Administrators and managers could explore the use of the MBI for assessment of units and implement interventions at a time where workers are beginning to develop burnout, rather than waiting until there are adverse

consequences of burnout such as high nurse turnover, or lower patient quality of care. Fostering interpersonal connections among interprofessional healthcare workers could help mitigate burnout, and using the MBI in a unit-level assessment with sociometry could help determine the type and best time to implement preventive strategies.

Age. The results of this study are inconsistent with findings of some research showing a correlation between age and the development of burnout. The results of this study further suggest that the relationships between age and burnout are weak. Previous research has been inconsistent in the significance of the relationships between age and burnout. A systematic review by Adrienessens et al. (2017) found younger age to be related to a higher risk of burnout. Dyrbye et al. (2019) used a cross-sectional survey method where age (for each year older, OR: 0.98, 95% CI: 0.98-0.99, $p < 0.0001$) was found to be a statistically significant independent predictor of burnout. Padilla Fortunatti and Palmeiro-Silva (2017) used a cross-sectional survey method to suggest that age is negatively correlated with emotional exhaustion (age = -0.39) as well as depersonalization (age = -0.23). Johnson-Coyle et al. (2016), also found a statistically significant ($p = 0.02$) negative relationship between age and burnout. Prior research showing significant results between age and burnout is performed outside of the United States (Ang et al., 2016). Generalizability of prior research outside the United States should be interpreted with caution. Culture is distinct and different from unit to unit, organization to organization, and especially when comparing healthcare in one country to another. Further research with nurses in the United States is needed to explore the strength of relationships between age and burnout. The results of the multivariable analysis of this study suggest that interpersonal and unit level factors are more

important than individual factors in the development of burnout. The three multivariate analyses completed on each subscale of burnout revealed that individual risk factors such as age or years of experience accounted for less variance than social support and collective efficacy. This study indicates that burnout is multifaceted and multi-leveled in risk factors. Further research is needed to examine if a significant relationship exists between age and burnout, particularly within a sample of United States based nursing.

Years of experience. This study did not find significant correlations between years of experience and burnout. This is consistent with prior extant literature that years of experience is not significantly correlated to the development of burnout (Ang et al., 2016). Ang et al., 2016 used a cross-sectional study to investigate the influence of demographic factors and personal characteristics and their development of burnout among nurses in Singapore. A multivariable analysis found that years-experience was not significantly associated with each of the three subscales of the MBI (Ang et al., 2016), which is consistent with the multivariable analyses from this study. Prior research has explored age and years-experience as one variable, instead of separating out if any differences occur (Xie, Wang, and Chen, 2011). These two variables, age and years of experience are unique and further research should explore them as two different and unique variables. Further research is needed to explore years-experience independent of age, particularly among United States based, intensive and critical care nurses.

Burnout at a unit-based level. This study provides empirical evidence to support ICU nurses are at a high risk of developing burnout. The prevalence of emotional exhaustion on the unit was high, the prevalence of depersonalization was moderate, and the prevalence of personal

accomplishment was high. These results are congruent with extant data on ICU HCPs (da Silva et al., 2015; Woo et al., 2020). In da Silva et al., 2015, the prevalence of burnout among high-strain workers was 72.5%. Woo et al., 2020, completed a systematic review and meta-analysis to investigate burnout symptoms prevalence in nurses globally. This study supports the current extant research on burnout that the prevalence of burnout among intensive and critical care nurses continues to remain high.

This study adds to the literature on assessing the prevalence among intensive and critical care nurses and assessing burnout at a unit level instead of an individual level. There are several practice implications to discuss. This research suggests a high prevalence of burnout among ICU workers, and that emotional exhaustion is the first aspect of burnout to develop. The results of this study support that burnout is a continuum that is developed overtime. The MBI is a valid and reliable tool that can assess workers for burnout to attempt to perform interventions as a stop gap to the development of burnout. By assessing burnout at multiple points in time, an organization can potentially stop burnout prior to reaching an end point where patient care or nurse turnover is affected. Further research is needed to assess burnout using a longitudinal design to further analyze the development of the depersonalization and personal accomplishment subscales of burnout. It would be important to assess if these subscales develop in a linear or concurrent manner, and by collecting all three MBI subscale scores over multiple points in time further information about the development of burnout could be revealed.

The recent National Academy of Medicine report, "Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being," recommended that an organizational

work environment is responsible for the development of patient provider burnout. (National Academies Press, 2019). This study adds to the growing body of literature that burnout is not only correlated to individual risk factors. Burnout is multifaceted and involves individual, unit, and organizational related risk factors. Interventions aimed only at the individual ignore organizational risk factors, and interventions aimed only at organizational risks ignore the individual. Interventions aimed to decrease burnout must use an approach where all three levels, the individual, the unit, and the organization, are addressed.

Collective Efficacy

The mean collective efficacy score of 4.41 (SD= 0.87) indicated that the participants perceive collective efficacy is present on their unit. These data revealed something new in assessing efficacy from a unit perspective. Extant research has examined the relationship between self-efficacy and burnout. A decrease in self-efficacy has been associated with an increase in missed patient care, as well as job satisfaction.

Self-Efficacy

Extant research has explored the relationship between self-efficacy and burnout. This focus on mainly the individual level has ignored the philosophical underpinnings of sociology, epidemiology, and anthropology where a person exists within a group or social context. Social cognitive theory discusses self-efficacy, and that self-efficacy influences an individual's level of effort, persistence, and performance levels (Bandura, 1977). Self-efficacy has been found to have a significant effect on the development of burnout (Duggleby et al., 2009; Youngcheng et al., 2018). Skaalvik and Skaalvik (2019) used a cross-sectional survey and found that teacher self-

efficacy is positively associated with engagement. These results support Maslach's theory with engagement being the opposite end of the continuum of burnout (Maslach, 2017). According to Bandura, collective efficacy is rooted in self-efficacy (1997). An individual may perceive high levels of inefficacy, but if they do not perceive the unit as being effective, they may feel they are not as accomplished as an individual (Bandura, 1997). Self-efficacy research is done at the individual level, and therefore can only provide partial information about the antecedents and consequences to a group of people. Nursing research has assessed the relationship between self-efficacy, burnout, and quality of patient care (Smith et al., 2018). Educational research has explored the relationship between self-efficacy and collective efficacy. Teacher self-efficacy was significantly related to collective efficacy which was also related to teacher burnout (Skaalvik and Skaalvik, 2007). Prior research has focused on individual risk factors for burnout, and similarly nursing research has focused on self-efficacy. Collective efficacy beliefs have been correlated with group performance (Watson et al., 2001). Early research exploring collective efficacy was not clear if collective efficacy was an individually held belief about the group, or if it was a shared belief among all group members (Watson et al., 2001). Evidence of a unit level mean score higher than the midpoint indicates that collective efficacy is present as a group attribute (Riggs & Knight, 1994) thereby moving self-efficacy from an individual level of analysis to a group level of analysis.

Collective Efficacy

This study adds to the extant literature by describing collective efficacy among healthcare workers. This study indicated that perceived collective efficacy was present on the unit.

Following a backwards stepwise regression of seven variables, only collective efficacy was significantly associated with burnout. Specifically collective efficacy was significantly associated with emotional exhaustion and personal accomplishment subscales of burnout. This significance may have occurred because collective efficacy is more important in the development of burnout than prior research has shown. These results indicate support for Maslach's Multidimensional Theory in thatthe end result of burnout results in an ineffective worker (Maslach, 2017). These results further support that burnout exists within the organizational environment, and not just at the individual level. This is congruent with the extant literature among educators and the effect of collective efficacy and burnout. The relationship between collective efficacy and burnout among educators has been well established (Skaalvik and Skaalvik, 2019). This study adds to the gap of assessing the relationship between collective efficacy and burnout among healthcare workers. This study also adds to the gap of assessing U.S. based healthcare workers. The strong relationship between collective efficacy and burnout suggest that the development of burnout is greatly affected by the unit and not the individual risk factors. Administrators and managers can use the Collective Efficacy Beliefs scale to assess the unit. Organizations need to develop what collective efficacy looks like for a unit and how to foster collective efficacy. An important function of leadership is not only to highlight and support self-efficacy, but also the efficacy beliefs of the entire group. Direct managers may foster collective efficacy among a group of individuals by highlighting group successes instead of only individual success. Further research is needed to continue to establish the associations between

collective efficacy and burnout among healthcare workers, particularly those working and residing within the United States.

Social Supports

This study explored four different types of social support and the relationship each individual type of support has on the development of burnout. Most of the research exploring relationships between social support and burnout use a survey design, with a tool that does not explore specific types of social supports. By exploring four types of social support, a deeper understanding of the connections between social support and burnout was found. The research also revealed different relationships depending on the type of social support. Emotional, informational, and instrumental social support were insignificant in the development of burnout and were sparse networks. However, a more developed unit may be sparse because multiple connections are repetitive and not needed for the diffusion of support. The advice-seeking social support network was correlated to the development of burnout and was a dense network. This study added to the body of knowledge which exists about social support and burnout by exploring four types of social support and the use of sociograms.

Emotional Support

There were no significant associations between emotional support and the development of burnout. These results are similar to past research where emotional support is negatively, but insignificantly related to burnout (Himle et al., 1989). Prior research has found a significant relationship between burnout and emotional support, namely perceived emotional support from their manager (Kickul & Posig, 2001). The betweenness scores for emotional support were

highly skewed. This finding may be explained by employees receiving emotional support outside

of their work, or by feeling fulfilled with this type of support from very few members of the unit.

This type of social support was the least dense compared to the other three, which supports the

idea that individuals are not receiving emotional support from many people on the unit. A

multiple regression analysis revealed that emotional support was the least important variable

correlated with the development of emotional exhaustion. The multiple regression for

depersonalization revealed that emotional support, while not statistically significant, accounted

for more of the variance than other forms of social support. This may indicate that receiving

emotional support from other individuals on the unit buffers the development of this dimension

of burnout. Emotional support was also not significant in the development of personal

accomplishment, but it did account for more variance than years of experience and instrumental

support. The relationships between emotional support and burnout are weak, but not entirely

unimportant. The sociogram images reveal more information about the presence of emotional

support on the unit. Although the unit manager was the individual most responsible for diffusing

emotional support, other nurses on the unit also were responsible as noted by high betweenness

scores. This group of nurses had a wide range of years of experience (7-29 years-experience).

The majority of the nurses with high betweenness scores had over 15 years-experience. These

results indicate the importance of using sociograms to further explore emotional support within a

group of individuals, and that emotional support is received from a small group of individuals.

Informational Support

There were no significant associations between informational support and the

development of burnout. These results add to the body of knowledge about relationships between informational support and burnout. Many researchers do not explore informational support, but instead look at social support as one concept (Halbesleben, 2005). Prior research that has explored informational support specifically has found if an unequal exchange of support is present, it is a risk for the development of burnout (VanYperen, 1998). Social network analysis methods may be used to explore reciprocity between individuals within a group. Results from prior research exploring informational support and burnout have been mixed, and some have used a modified/shortened version of the MBI (Himle et al., 1991). This type of social support was sparse, indicating that individuals receive this support from a small number of individuals present on the unit. The manager was the participant most responsible for diffusion of this type of support, but nurses who had greater than 12 years of experience had the next highest betweenness scores. These results indicate a group of individuals that are all responsible for diffusing informational support. Sociograms could be used to identify potential leaders and preceptors for the unit. A multiple regression revealed that informational support was responsible for the highest percentage of variance for depersonalization, however these results were weak and insignificant. The depersonalization subscale of burnout is the most understudied and least understood (Wheeler et al., 2018). These results indicate a need to further research the depersonalization subscale of burnout, and to further explore informational support and the reciprocity felt among a group of individuals.

Instrumental Support

There were no significant associations found between instrumental support and the

development of burnout. The betweenness scores were highly skewed indicating that this type of support is diffused by a small number of individuals. The manager was the individual responsible for diffusing instrumental support. These results are congruent with extant literature on instrumental support and burnout (Zijlstra, Peeters, Janna, 2003). Instrumental support can have a negative effect if is imposed, or a neutral effect if it is not imposed support (Zijlstra, Peeters, Janna, 2003). Past research has referred to imposed instrumental support as the "unhelpful helper" (Zijlstra, Peeters, Janna, 2003). If an individual does not want this type of support, but it is offered (or imposed) this may lead to the development of burnout. However, if the individual receiving support is neutral about the support being given, there are no direct effects on the risk of burnout (Zijlstra, Peeters, Janna, 2003). The results of this study indicate that this support on the unit is not imposed, and thereby neutral in the development of burnout. For many participants the individual(s) they named for instrumental support were also the individuals they named for emotional support. This indicates that individuals only receive this type of support from a few select individuals that they may feel most comfortable. The multiple regression analysis revealed that instrumental support was more important than individual level factors (age and years of experience) in the development of emotional exhaustion, but not in the development of depersonalization, or personal accomplishment. These results indicate that instrumental support, when neutral, may have a very weak effect on the development of burnout. Further research is needed to explore non-neutral instrumental support and any relationship with the development of burnout.

Advice-Seeking Social Support

For advice-seeking social support a nurse with greater than the average number of years on the unit was the person most responsible for diffusion. A higher betweenness score was not significantly correlated to a higher burnout score. This could indicate that nurses who are providing types of social support do not view this as a burden and instead have an intrinsic reward that mitigates the development of burnout. According to Maslach's multidimensional theory of burnout the area of community is about the individual's perception of positive connections with their colleagues and managers (Maslach, 1998). The density of the advice-seeking social support (67%) indicates that individuals are highly connected with this specific type of social support. This is congruent with other SNA research on advice-seeking support and medical practitioners where density was negatively correlated with medication errors and patient falls (Brewer et al., 2018). This is congruent with the extant data on the importance of social support being received from a worker's first line manager (Lowe et al., 2020: Nougueira et al., 2019). Network theory finds personal relationships associated with behaviors (Valente, 2010). The theoretical framework of social network analysis supports the idea that individuals are a part of a larger whole, a larger network of individuals. Social behaviors and influence are diffused among all individuals within the network (Valente, 2010). Results of this study suggest that relationships are associated with the development of burnout, with providing and receiving social support being a potential buffer to burnout development. This is congruent with the extant data on the importance of social support being received from a worker's first line manager (Lowe et al., 2020: Nougueira et al., 2019). These results support further research on burnout at a unit-

based level, specifically exploring different types of social support and which types have the highest correlation to burnout.

These results reveal something new by exploring different types of social support. Social network analysis methods, and the use of sociograms reveal more about social support and the reciprocity of social support than the usually used survey-methods. Extant literature typically examines the relationship between perceived social support and burnout. The methods used in this study explored the diffusion of social support and if diffusing social support affected burnout scores in individuals. The results from this unit suggest that the individuals who are the most responsible for the diffusion of specific types of social support are not at a higher risk for developing burnout. This is congruent with the extant literature and the associations between social support and burnout. Social network analysis methods have been used to assess the influence of behaviors (Meredith, et al., 2020; Shapiro et al., 2015). Most of the burnout research has considered burnout an individual affliction, this research reveals the importance of exploring burnout as a socially influenced behavior. Interpersonal relationships and providing support may buffer the development of burnout. These results suggest the importance of exploring perceived, received, and expressed social support and the relationships to the development of burnout.

Moderate negative associations were found between advice-seeking support and burnout. The results of this study add to the literature by suggesting that providing advice-seeking support does not add to the burden of healthcare workers and instead may offer an intrinsic reward thereby buffering the development of burnout. Further research is needed to explore the relationship between advice-seeking support and the development of burnout. In summary,

providing any type of social support on the unit did not affect the development of burnout, and the individuals who were the most responsible for the diffusion of support are congruent with the extant literature. The results from this study support the use of SNA methods to further explore burnout at a unit-based level of research. SNA methods provide a deeper level of analysis that may be used to explore multifaceted concepts such as burnout.

Implications for Education, Practice, Policy, Administration, and Research Education

The Institute of Medicine's Future of Nursing Report (2011) recommends that nursing education programs, and nursing associations should "prepare the nursing workforce to assume leadership positions across all levels…" (p. 14). The results of this study suggest the need to instill important leadership qualities early in nursing education, prior to entering practice. The nurses with fewer than 3 years-experience were not identified as being the individuals responsible for the diffusion of social support. Nursing education needs to include lessons on leadership and the importance of fostering collective efficacy and social support on the unit. The results of this study identified that a senior nurse on the unit was responsible for the diffusion of advice-seeking support. One nurse should not be responsible for diffusing all the advice. If this nurse were to leave the unit, or the organization, their leaving could be detrimental to the diffusion of advice-seeking support. Instead, the results of this study support using tools and sociometry to identify multiple leaders on the unit. When leaders are identified, organizations can train and educate these individuals how to diffuse social support, how to foster collective efficacy, and also feel supported themselves to avoid burnout. These results underline the importance of developing all nurses to lead and to provide advice-seeking support to mitigate the

development of burnout at a unit-based level.

Practice implications. Collective efficacy is a significant predictor to the development of burnout. The results of this study suggest the importance of highlighting group success and patient outcomes to mitigate the development of burnout. Perhaps nursing needs to reevaluate success and quality nurse indicators, and instead units should amplify the ways the unit members are making a difference in patient lives. A unit with a high perception of collective efficacy being present on the unit are more likely to provide higher quality of care with a lower risk of burnout.

The results of this study also indicate that the unit manager, and senior-level nurses are the most important individuals for the diffusion of interventions aimed at decreasing levels of burnout. The results of this study suggest a greater need for educational and developmental strategies to be put in place for managers. However, there is a risk that if only unit managers are developed and only unit managers diffuse support, their workload may put them at a higher risk of developing burnout. The results of this study indicate the importance in identifying the individuals at a peer-level that are responsible for the diffusion of support and these individuals should be developed and retained. Results of this study suggest that providing support did not affect burnout scores. Instead, perhaps providing support mitigated burnout subscales. The results may imply that intrinsic motivation may mitigate burnout in healthcare workers. Further research is needed to assess if providing support buffers the development of burnout.

Current interventions being used to decrease burnout are focused on an individual level. These interventions may be successful however, systems-leveled interventions may be more

impactful in mitigating burnout (Zhang et al., 2020). Group interventions such as team building, increasing communication, and debrief sessions with focus groups when combined with individual level interventions may have the best success at decreasing burnout risk (Zhang, et al., 2020). The results of this research suggest the importance of developing and implementing systems-level interventions such as increasing forms of social support on the unit or increasing the perception of collective efficacy on the unit. This research also shows the importance in assessing the unit individuals, and their sphere of influence prior to attempting to implement interventions to decrease burnout. It may be important to use the same individuals who were identified as being responsible for diffusing social supports to be the early adopters and trained individuals to diffuse an intervention.

Policy implications. The importance of nurse well-being has been highlighted by the Future of Nursing Report (IOM, 2010). The Future of Nursing Report and recommendation 7 calls for a preparation of nurses to lead change and to further advance the health of populations. A policy change is needed to create leadership development among future and existing nurse leaders (pg. 14). Many nurses have cited poor management as a reason for high turnover (IOM, 2010, p. 120). This research suggests that administrators could use SNA methods to identify and develop not just nurse managers, but also nurses on the unit that are the most responsible for diffusion of social support. The manager was not the only individual responsible for the diffusion of social support. A nurse who had been working on the unit for greater than the average number of years was the individual responsible for diffusing advice-seeking social support. Further policy and funding could identify these individuals and provide them with educational support.

This education could help increase the perception of support on the unit since an increase in advice-seeking social support has been found to have a positive correlation with nurse quality indicators (Brewer et al., 2018). Better coaching/mentoring programs could be used to develop future nurse leaders and influential individuals on the unit. To foster collective efficacy, policy changes should evaluate how often evaluative performance reviews are needed for nurses. Perhaps by increasing the feedback nurses receive on their ability to provide transformative patient care as a unit, burnout could be mitigated.

Research implications. This study used a network design to explore burnout at a unit-based level. The results of this study support the continued use of SNA methods to explore burnout at a unit level to better understand the development of burnout and guide strategies in mitigating burnout. Future research should use different variables to determine unit risk of developing burnout. Social network analysis can assess if social support and/or collective efficacy are unique indicators of burnout in different units. While ICU nurses are more likely to experience burnout, they are not the only nurses to have high burnout scores. SNA methods can be applied to study medical-surgical units, pediatric units, and oncology units to explore if specialty patient care affects burnout scores. Further replication of this study on different units within an organization could assess the differences between types of patient care, such as comparing a medical-surgical unit to an intensive care unit. Social network analysis could be used to analyze differences comparing a high patient satisfaction unit to a low patient satisfaction unit, or a unit with high nurse turnover to a unit with low nurse turnover. Differences between units and the quality of care or the occurrence of a never event could be analyzed using social

network analysis. This research would be important to assess if similar network variables

(collective efficacy and social supports) are more important than individual variables on different

types of patient care units.

This study assessed betweenness centrality. This type of centrality was chosen since it

best addressed the research aim that focused on a unit-based level of burnout. Other SNA

measures such as constraint, cliques, or structural holes can help administration and

organizations to better assess how social networks affect the development of burnout among a

group of healthcare workers. This information could be helpful for administrators to be able to

understand how interpersonal connections may be responsible for the development of burnout.

Social network structural characteristics, such as types of centralities, should be incorporated into

interventional research. Centrality can be used to identify the individual that is the most

responsible for diffusion of communication, social norms, or behaviors. Intervention based

research can use SNA methods and centrality to identify the individual that should be promoted

as the early adopter to help diffuse certain types of interventions throughout the unit (Muller &

Peres, 2019).

Cohesion (strong mutual influence among its members) and constraint (measuring the

extent to which the manager's network of colleagues limits alternative ideas and sources of

support) if measured, would expand how burnout is a social behavior and if burnout can diffuse

among members of a unit. A network with high levels of cohesion has a greater influence of

social norms and behaviors. This measurement, if explored in research, would add to the

knowledge of how burnout is spread among members of a group. Constraint measures the extent

to which time and energy is concentrated within a small group of individuals (a cluster) (Burt, 2004). When measured within a unit, constraint can inform the researcher about the manager's network of colleagues. A network with high constraint may have a manager that is difficult to approach with alternative ideas or add additional sources of support. Adding the measurement and assessment of structural holes, the theory that certain individuals hold positional advantages/disadvantages that are a gap between two individuals in a unit (Burt, 1994), would add to the research of how burnout spreads within a group of people. Social network analysis methods have been used to identify how certain social behaviors such as drug and alcohol use are contagious among a group of people (Valente, 2010). Meredith et al. (2020) explored the idea of burnout as a contagious behavior among a group of teachers. If burnout is a syndrome, that occurs within an organizational context (Maslach, 2017) then these methods provide a strategy to study whether if burnout itself is contagious, and how burnout spreads within different units.

This study used a whole network approach with an undirected network. This study used a census list for participants to select as few, or as many, individuals from a predetermined list. This method does not allow the researcher to assess the strength of connections (ties) between individuals. Researchers can use SNA methods to allow a participant to rank individuals from whom they receive support. This ranking can be used to assign strength to a connection. This information may add a structure variable to the analysis, and it may be important to look at the strength of the connection between individuals and their burnout scores. The strength of connections would add to the knowledge about the density of the network and if the network has strong connections the network might not need to be dense to be effective.

Exponential random graph modeling (ERGM) is a newer approach, used in conjunction with social network analysis methods. This study did not implore exponential random graph modeling (ERGM) to predict the possibility of burnout occurring. This was not used since this explores the dyad level (connections between two) and the aim of this study was at the aggregate or unit-based level. The connections (ties) that occur in empirical social groups are not independent. A connection may occur because of reciprocity, because of homophily, or transitivity (Harris, 2014). Homophily is a sociology concept describing how like-minded (or gendered, ethnic background, educational background) tend to stick together (Harris, 2014). Transitivity is the overall probability for the unit to have close by nodes interconnected and can reveal clusters, cliques, or subgroups within the larger network (Harris, 2014). ERGMs use simulation to allow dependencies of connections to be modeled. A connection may have occurred because of similarities in age, gender, ethnic background, or years of experience. ERGMs can be used to assess if a connection between two individuals predicted a burnout score, or if a burnout score predicts a connection between two individuals.

Other types of research design can be used to explore burnout at the unit level. Longitudinal designed research can be used to further develop Maslach's theory of multidimensional burnout. Very little research has focused on the development of burnout, and the three subscales of burnout, over a longer period. Most burnout research has only assessed if burnout can be mitigated up to two years post intervention. There is not sufficient research to show if interventions mitigate burnout over a longer period of time. Longitudinal research should

also be used to assess how ties between individuals on the unit change as employees leave the unit or are added to the unit.

Conclusion

Due to the severity of burnout in nurses, and HCPs worldwide, predictors of and influences on the development of burnout need to be studied and understood. ICU nurses are of particular concern regarding burnout due to its increased prevalence compared to other nursing units. This study provided insight into important intrapersonal and interpersonal variables associated with the development of burnout. Findings support previous literature suggesting that ICU nurses have a high risk of developing burnout. SNA provided a deeper level of analysis to better understand this relationship. The relationship between collective efficacy and burnout was significant and could possibly protect individuals from developing the end stage of burnout. The results of this study provide insight into the complexity of burnout and the complexity of social support within a unit. The results of this study add significant knowledge to the existing literature on burnout and further implications for burnout research.

APPENDIX A

IRB LETTER

NOTICE OF IRB EXEMPTION OF A RESEARCH PROJECT

Investigator **Burkhart, Elizabeth**

LU Number **214732**

Title **Nurse Burnout, Collective Efficacy, and the Social Network of a Unit**

Date of
Review **07/01/2021**

Reason **45CFR46.102(l) Category Not Research**

Comments **This project consists of activities that do not meet the definition of human subject research according to the 45 CFR 46.102(l). Research means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program which is considered research for other purposes.**
1. This is a quality improvement project being conducted at Loyola Medical Center and will be implemented as a partial fulfillment of requirements for a PhD at Loyola University Chicago Marcella Niehoff School of Nursing.
2. Should you wish to make modifications that involve changing the type, nature, source (etc.) of the data/materials specified in the current proposal, you MUST request such changes in advance from the Loyola IRB, as this may change the categorization of the proposed research.

This project has been determined to be EXEMPT from IRB review.
There are no reporting requirements associated with this project.

The Full Board will review this determination on 07/21/2021.
If the Board disagrees with this action, you will be notified by 07/28/2021.

APPENDIX B

PHD FLYER

PhD Research Study

Burnout, Collective Efficacy & The Social Network of a Unit

About this study

You are being invited to take part in a research study to describe employee burnout within a hospital unit. Results will be used to improve education and support for ICU employees.

LOYOLA
UNIVERSITY CHICAGO
AD · MAJOREM · DEI · GLORIAM
1870

Contact Amy Kiefer, MSN, RN for more information or questions

✉ akiefer@luc.edu   📞 815-814-8154

🌐 project-redcap.org/

Participants will complete a survey lasting about 30-minutes. while off-shift using a protected weblink listed below. The survey includes questions related to your demographics, your level of burnout, your unit's ability to complete tasks and be successful as a unit, and your social support on the unit. After completing the survey, you will be given a link to a $10 Amazon Gift Card as a token of my appreciation.

APPENDIX C

RIGGS AND KNIGHT JAP COLLECTIVE EFFICACY

Appendix

Instructions and Items for Newly Developed Scales

Items marked with an asterisk were reverse scored.

Group Success–Failure Scale

Think about the department in which you work. Think about this department's recent ability to do its work and to accomplish its goals. This department may be an office group, an academic department, or a work crew (such as a point crew, the motor pool, a maintenance crew, etc.). When responding to the following items, answer in reference to your recent experiences within this department at work. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. The recent work of this department (refer to the above definition of a department) deserves an A+.
*2. This department has been doing poor work.
3. This department has recently benefited because its performance was good.
4. As a group, this department has been meeting its goals.
*5. As a group, this department has recently had some costly failures.
*6. The past performance of this department has had little impact on the success of the larger organization as a whole.
7. Good things have happened because of the work done by this department.
*8. The organization has recently suffered because of mistakes made by this department.
9. This department has recently accomplished some goals.

Personal Efficacy Beliefs Scale

Think about your ability to do the tasks required by your job. When answering the following questions, answer in reference to your own personal work skills and ability to perform your job. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. I have confidence in my ability to do my job.
*2. There are some tasks required by my job that I cannot do well.
*3. When my performance is poor, it is due to my lack of ability.
*4. I doubt my ability to do my job.
5. I have all the skills needed to perform my job very well.
*6. Most people in my line of work can do this job better than I can.
7. I am an expert at my job.
*8. My future in this job is limited because of my lack of skills.
9. I am very proud of my job skills and abilities.
*10. I feel threatened when others watch me work.

Personal Outcome Expectancy Scale

Think about the results of doing your job well OR doing your job poorly. Do important outcomes depend upon how well you perform, or do most job-related outcomes occur whether or not you do a good job? When answering the following questions, answer in reference to your

current job. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. I am well-rewarded for my good work.
*2. Doing good work here is not worth the effort.
3. Performing your job well is a sure way to get ahead here.
*4. Most of my good work goes unnoticed.
5. Around here, such things as salary and promotions are determined by how well a person does his or her job.
6. My work evaluations are accurate.
*7. Good work gets the same results as poor work in this job.
8. I must do a good job in order to get what I want.

Collective Efficacy Beliefs Scale

Think about the department in which you work. This department may be an office group, a maintenance crew, an academic department, etc. When responding to the following items, answer in reference to this group's work-related ability. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. The department I work with has above average ability.
*2. This department is poor compared to other departments doing similar work.
*3. This department is not able to perform as well as it should.
4. The members of this department have excellent job skills.
*5. Some members of this department should be fired due to lack of ability.
*6. This department is not very effective.
*7. Some members in this department cannot do their jobs well.

Collective Outcome Expectancy Scale

Think about the department in which you work. This department may be an office group, a maintenance crew, an academic department, etc. Think about the results of this department doing its job well OR doing its job poorly. Do important outcomes depend upon the department's performance, or do most job-related outcomes occur whether or not the department does a good job? When answering the following questions, answer in reference to your beliefs about your current department. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. It is important for our group to do good work.
2. Many people benefit when our group does good work.
*3. No one would notice if our group did its work poorly.
4. This organization depends heavily upon the quality of work my group does.
*5. This organization does not need the work done by this group.
6. My group expects good outcomes when we do good work.

APPENDIX D

APPROVAL FROM DR. KNIGHT TO USE THE SURVEY

From: Patrick Knight <knight@ksu.edu>
Sent: Thursday, June 10, 2021 4:31 PM
To: Kiefer, Amy <akiefer@luc.edu>
Subject: Re: Riggs & Knight Collective Efficacy Beliefs Scale (1994)

Amy,

Feel free to use the scale. Best of luck with your dissertation.

Patrick A. Knight

Sent from my iPhone

Dear Dr. Knight,

My name is Amy Kiefer, and I am a PhD student at Loyola University Chicago in the college of nursing. I am seeking permission to use the Riggs & Knight Collective Efficacy Beliefs Scale (1994) for my dissertation: Burnout, Collective Efficacy and the Social Network of a Unit.

Would you be willing to grant me permission to use this scale?
Please let me know if you require any additional information.

Thank you,
Amy Kiefer

Amy Kiefer, MSN, RN
Director Hybrid Accelerated Bachelors of Science in Nursing (H-ABSN) Program
GNUR238 Course Director

773-508-3375

akiefer@luc.edu

APPENDIX E

MBI SURVEY APPROVAL

mind garden

www.mindgarden.com

To Whom It May Concern,

The above-named person has made a license purchase from Mind Garden, Inc. and has permission to administer the following copyrighted instrument up to that quantity purchased:

Maslach Burnout Inventory forms: Human Services Survey, Human Services Survey for Medical Personnel, Educators Survey, General Survey, or General Survey for Students.

The three sample items only from this instrument as specified below may be included in your thesis or dissertation. Any other use must receive prior written permission from Mind Garden. The entire instrument form may not be included or reproduced at any time in any other published material. Please understand that disclosing more than we have authorized will compromise the integrity and value of the test.

Citation of the instrument must include the applicable copyright statement listed below. Sample Items:

MBI - Human Services Survey - MBI-HSS:
I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some recipients.

Copyright ©1981 Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., www.mindgarden.com

MBI - Human Services Survey for Medical Personnel - MBI-HSS (MP):
I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some patients.

Copyright ©1981, 2016 by Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., www.mindgarden.com

MBI - Educators Survey - MBI-ES:
I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some students.

Copyright ©1986 Christina Maslach, Susan E. Jackson & Richard L. Schwab. All rights reserved in all media. Published by Mind Garden, Inc., www.mindgarden.com

MBI - General Survey - MBI-GS:
I feel emotionally drained from my work.
In my opinion, I am good at my job.
I doubt the significance of my work.
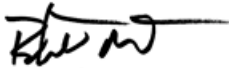
MBI - General Survey for Students - MBI-GS (S):
I feel emotionally drained by my studies.
In my opinion, I am a good student.
I doubt the significance of my studies.

Sincerely,

Robert Most
Mind Garden, Inc.
www.mindgarden.com

REFERENCE LIST

Abdo, S. A. M., El-Sallamy, R. M., El-Sherbiny, A. A. M., & Kabbash, I. A. (2015). Burnout among physicians and nursing staff working in the emergency hospital of Tanta University, Egypt. *Eastern Mediterranean Health Journal, 21*(12), 1-10.

Abedi-Gilavandi, R. Talebi, F., Abedi-Taleb, E., Nateghi, S., Khedmat, L., Amini, F., Moshfeghi, S., & Mohammad, E. (2019). Burnout among nursing staff in Ziaeian Hospital. *Mater Sociomed, 31*(1), 10-13.

Adriaenssens, J., De Gucht, V., & Maes, S. (2015). Determinants and prevalence of burnout in emergency nurses: A systematic review of 25 years of research. *International Journal of Nursing Studies, 52*(2), 649-661.

Ahmadpanah, M., Torabian, S., Dastore, K., Jahangard, L., & Haghighi, M. (2015). Association of occupational burnout and type of personality in Iranian general practitioners. *Work*, *51*(2), 315-319.

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J., & Silber, J. H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *Journal of the American Medical Association*, *288*(16), 1987-1993.

Asgari, S., Shafipour, V., Taraghi, Z., & Yazdani-Charati, J. (2019). Relationship between moral distress and ethical climate with job satisfaction in nurses. *Nursing Ethics, 26*(2), 346-356.

Avanzi, L., Schuh, S. C., Fraccaroli, F., & van Dick, R. (2015). Why does organizational identification relate to reduced employee burnout? The mediating influence of social support and collective efficacy. *Work & Stress*, *29*(1), 1-10.

Bakker, A. B. (2009). Building engagement in the workplace. In R. J. Burke, & C. L. Cooper (Eds.), *The peak performing organization* (pp. 50-72). Milton Park: Routledge.

Bakker, A. B, Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology, 22*(3), 309-328.

Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. I. (2014). Burnout and work engagement: The JD-R approach. *Annual Review of Organizational Psychology and Organizational Behavior, 1,* 389-411.

Bakker, A. B., Killmer, C. H., Siegrist, J., & Schaufeli, W. B. (2008). Effort-reward imbalance and burnout among nurses. *Journal of Advanced Nursing*. https://doi.org/fq9pp9

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1986). *Social foundations of thought and action*. Prentice-Hall: Englewood Cliffs, NJ.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*(2), 117-148.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.

Barr, P. (2018). Personality traits, state positive and negative affect, and professional quality of life in neonatal nurses. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 47*, 771-782.

Beckstead, J.W. (2002). Confirmatory factor analysis of the Maslach Burnout Inventory among Florida Nurses. *International Journal of Nursing Studies, 39*, 785-792.

Bianchi, R. (2018). Burnout is more strongly linked to neuroticism than to work-contextualized factors. *Psychiatry Research, 270*, 901-905.

Boamah, S. A., Read, E. A., & Laschinger, H. K. S. (2017). Factors influencing new graduate nurse burnout development, job satisfaction and patient care quality: A time-lagged study. *Journal of Advanced Nursing, 73*(5), 1182-1195.

Boerner, K., Gleason, H., & Jopp, D. S. (2017). Burnout after patient death: Challenges for direct care workers. *Journal of Pain and Symptom Management, 54*(3), 317-325. https://doi.org/gcj6g8

Boudreau, R. A., Boudreau, W. F., & Mauthe-Kaddoura, A. J. (2015, May). *From 57 for 57: A bibliography of burnout citations* [Conference session]. The 17th Conference of the European Association of Work and Organizational Psychology (EAWOP), Oslo, Norway.

Bourdieu, P. (1986). The forms of capital. In: Richardson J (Ed.) *Handbook of theory and research for the sociology of education* (pp. 241-258)*. Greenwood: Westport, CT.

Brewer, B. B., Carley, K. M., Benham-Hutchins, M. M., Effken, J. A., Reminga, J., & Kowalchuck, M. (2018). Relationship of staff information sharing and advice networks to patient safety outcomes. *Journal of Nursing Administration,48*(9), 437-444. https://doi.org/gd9qjr

Brook, J., Aitken, L. M., MacLaren, J. A., & Salmon, D. (2021). An intervention to decrease burnout and increase retention of early career nurses: A mixed methods study of acceptability and feasibility. *BMC Nursing*, *20*(1), 1-12.

Brown, S., Whichello, R., & Price, S. (2018). The impact of resiliency on nurse burnout: An integrative literature review. *Medsurg Nursing, 27*(6), 349-378.

Bunger, A. C., Doogan, N., Hanson, R. F., & Birken, S. A. (2018). Advice-seeking during implementation: A network study of clinicians participating in a learning collaborative. *Implementation Science, 13*, 101. https://doi.org/gdzp95

Bureau of Labor Statistics, U.S. Department of Labor. (2022). *Occupational outlook handbook, registered nurses*. https://www.bls.gov/ooh/healthcare/registered-nurses.htm

Burt, R. S. (2004). Structural holes and good ideas. *American Journal of Sociology, 110*(2), 349-399.

Cañadas-De la Fuente, G. A., Gómez-Urquiza, J. L., Ortega-Campos, E. M., Cañadas, G. R., Albendín-García, L., & De la Fuente-Solana, E. I. (2018a). Prevalence of burnout syndrome in oncology nursing: A meta-analytic study. *Psychoncology, 27*(5), 1426-1433.

Cañadas-De la Fuente, G. A., Ortega, E., Ramirez-Baena, L., De la Fuente-Solana, E. I., Vargas, C., & Gómez-Urquiza, J. L. (2018b). Gender, marital status, and children as risk factors for burnout in nurses: A meta-analytic study. *International Journal of Environmental Research and Public Health, 15*(10), 2102.

Cañadas-De la Fuente, G. A., Vargas, C., San Luis, C., Garcia, I., Cañadas, G. R., & De la Fuente-Solana, E. I. (2015). Risk factors and prevalence of burnout syndrome in the nursing profession. *International Journal of Nursing Studies, 52*, 240-249.

Chamberlain, S. A., Gruneir, A., Hoben, M., Squires, J. E., Cummings, G. G., & Estabrooks, C. A. (2017). Influence of organizational context on nursing home staff burnout: A cross-sectional survey of care aides in Western Canada. *International Journal of Nursing Studies*, *71*, 60-69.

Chen, J., Li, J., Cao, B., Wang, F., Luo, L., & Xu, J. (2019). Mediating effects of self-efficacy, coping, burnout and social support between job stress and mental health among young Chinese nurses. *Journal of Advanced Nursing, 76*, 163-173.

Chesak, S. S., Bhagra, A., Cutshall, S., Ingram, A., Benoit, R., Medina-Inojosa, J. R., Hayes, S. N., Carolan, B. J., & Luthar, S. (2020). Authentic connections groups: A pilot test of an intervention aimed at enhancing resilience among nurse leader mothers. *Worldviews on Evidence-Based Nursing, 17*(1), 39-48.

Chesak, S. S., Cutshall, S. M., Bowe, C. L., Montanari, K. M., & Bhagra, A. (2019). Stress management interventions for nurses. *Journal of Holistic Nursing, 37*(3), 288-295.

Chowdhury, R. A. (2018). Burnout and its organizational effects: A study on literature review. *Journal of Business & Financial Affairs, 7*(4), 1-3.

Cimiotti, J. P., Aiken, L. H., Sloane, D. M., & Wu, E. S. (2012). Nurse staffing, burnout, and healthcare associated infection. *American Journal of Infection Control, 40*(6), 486-490.

Claridge, T. (2018). Dimensions of social capital—Structural, cognitive, and relational. *Social Capital Research.* https://tinyurl.com/mte6hw5x

Clarkson, M., Heads, G., Hodgson, D., & Probst, H. (2019). Does the intervention of mindfulness reduce levels of burnout and compassion fatigue and increase resilience in pre-registration students? A pilot study. *Radiography*, *25*(1), 4-9.

Colindres, C. V., Bryce, E., Coral-Rosero, P., Ramos-Soto, R. M., Bonilla, F., & Yassi, A. (2018). Effect of effort-reward imbalance and burnout on infection control among Ecuadorian nurses. *International Nursing Review, 65*, 190-199.

Costenbader, E., & Valente, T.W. (2003). The stability of centrality measures when networks are sampled. *Social Networks, 25,* 283-307.

Dall'Ora, C., Ball, J., Reinius, M., & Griffiths, P. (2020). Burnout in nursing: A theoretical review. *Human Resources for Health, 18(*41), 1 17.

da Silva, J. L., da Silva Soares, R., dos Santos Costa, F., de Souza Ramos, D., Lima, F. B., & Teixeira, L. R. (2015). Psychosocial factors and prevalence of burnout syndrome among nursing workers in intensive care units. *Revista Brasileira de Terapia Intensiva, 27*(2), 125-133.

De la Fuente-Solana, E., Gomez-Urquiza, J. L., Canadas, G. R., Albendin-Garcia, L., Ortega-Campos, E., & Cañadas-De la Fuente, G. A. (2017). Burnout and its relationship with personality factors in oncology nurses. *European Journal of Oncology Nursing, 30*, 91-96.

Demerouti, A., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86,* 499-512.

Demerouti, E., Bakker, A., B., Vardako, I., & Kantas, A. (2003). The convergent validity of two burnout instruments. *European Journal of Psychological Assessment*, *19*(1),12–23.

Donohoo, J. (2018). Collective teacher efficacy research: Productive patterns of behaviour and other positive consequences. *Journal of Educational Change, 19*, 323-345.

Dorneles, A. J. A., de Lima Dalmolin, G., Andolhe, R., de Souza Magnago, T. S. B., & Lunardi, V. L. (2020). Sociodemographic and occupational aspects associated with burnout in military nursing workers. *Revista Brasileira de Enfermagem, 73*(2).

Dos Santos, L. M. (2020). Stress, burnout, and low self-efficacy of nursing professionals: A qualitative inquiry. *Healthcare (Basel) 8*(4).

Duarte, J., & Pinto-Gouveia, J. (2016). Effectiveness of a mindfulness-based intervention on oncology nurses' burnout and compassion fatigue symptoms: A non- randomized study. *International Journal of Nursing Studies, 64*, 98-107.

Duggleby, W., Cooper, D., & Penz, K. (2009). Hope, self-efficacy, spiritual wellbeing and job satisfaction. *Journal of Advanced Nursing, 65*(11), 2376–2385. https://doi.org/fhwr5w

Dwyer, P. A., Revell, S. M. H., Sethares, K. A., & Ayotte, B. J. (2019). The influence of psychological capital, authentic leadership in preceptors, and structural empowerment on new graduate nurse burnout and turnover. *Applied Nursing Research, 48*, 37-44.

Dyrbye, L. N., West, C. P., Johnson, P. O., Cipriano, P. F., Beatty, D. E., Peterson, C., Major-Elechi, B., & Shanafelt, T. (2019). Burnout and satisfaction with work-life integration among nurses. *Journal of Occupational and Environmental Medicine, 61*(8), 689-698.

Eckstrom, E., Tilden, V. P., & Tuepker, A. (2020). Teamness, burnout, job satisfaction and decision-making in the VA Centers of Excellence in Primary Care Education. *Journal of Interprofessional Education & Practice*, *19*, 100328.

Farahbod, F., Chegini, M. G., Eramsadati, L. K., & Zahra, M.-A. (2015). The association between social capital and burnout in nurses of a trauma referral teaching hospital. *Acta Medica Iranica, 53*(4), 214-219.

Fida, R., Laschinger, H. K. S., & Leiter, M. P. (2018). The protective role of self-efficacy against workplace incivility and burnout in nursing: A time-lagged study. *Health Care Management Review, 43*(1), 21-29.

Firth, H., & Britton, P. (1989). 'Burnout', absence and turnover amongst British nursing staff. *Journal of Occupational Psychology*, *62*(1), 55-59.

Fong, T. C., Ho, R. T., & Ng, S. M. (2014). Psychometric properties of the Copenhagen burnout inventory—Chinese version. *The Journal of Psychology*, *148*(3), 255-266. Retrieved February 16, 2022, from https://tinyurl.com/2p8nbxpm

Frajerman, A., Morvan, Y. Krebs, M. O., Gorwood, P., & Chaumette, B. (2019). Burnout in medical students before residence: A systematic review and meta-analysis. *European Psychiatry, 55*, 36-42.

Fred, H. L., & Scheid, M. S. (2018). Physician burnout: causes, consequences, and cures. *Texas Heart Institute Journal*, *45*(4), 198.

Frey, R., Robinson, J., Wong, C., & Gott, M. (2018). Burnout, compassion fatigue and psychological capital: Findings from a survey of nurses delivering palliative care. *Applied Nursing Research*, *43*, 1-9.

Frith, K. H., Anderson, E. F., Caspers, B., Tseng, F., Sanford, K., Hoyt, N. G., & Moore, K. (2010). Effects of nurse staffing on hospital-acquired conditions and length of stay in community hospitals. *Quality Management in Healthcare*, *19*(2), 147-155.

Frögéli, E., Djordjevic, A., Rudman, A., Livheim, F., & Gustavsson, P. (2016). A randomized controlled pilot trial of acceptance and commitment training (ACT) for preventing stress-related ill health among future nurses. *Anxiety, Stress, & Coping*, *29*(2), 202-218.

Garcia-Carmona, M., Marin, M. S., & Aguayo, R. (2018). Burnout syndrome in secondary school teachers: A systematic review and meta-analysis. *Social Psychology of Education, 22,* 189-208.

Gomez-Urquiza, J. L., Vargas, C., De la Fuente, E. I., Fernández-Castillo, R., & Cañadas-De la Fuente, G. A. (2017). Age as a risk factor for burnout syndrome in nursing professionals: A meta-analytic study. *Research in Nursing & Health, 40*(2), 99-110.

Guest, R. S., Baser, R., Li, Y., Scardino, P. T., Brown, A. E., & Kissane, D. W. (2011). Cancer surgeons' distress and well-being, I: The tension between a culture of productivity and the need for self-care. *Annals of Surgical Oncology*, *18*(5), 1229-1235.

Günüşen, N. P., Wilson, M., & Aksoy, B. (2018). Secondary traumatic stress and burnout among Muslim nurses caring for chronically ill children in a Turkish hospital. *Journal of Transcultural Nursing*, *29*(2), 146-154.

Guo, Y. F., Plummer, V., Lam, L., Wang, Y., Cross, W., & Zhang, J. P. (2019). The effects of resilience and turnover intention on nurses' burnout: Findings from a comparative cross-sectional study. *Journal of Clinical Nursing*, *28*(3-4), 499-508.

Halbesleben, J. R., & Demerouti, E. (2005). The construct validity of an alternative measure of burnout: Investigating the English translation of the Oldenburg Burnout Inventory. *Work & Stress*, *19*(3), 208-220.

Hämmig, O. (2018). Explaining burnout and the intention to leave the profession among health professionals–a cross-sectional study in a hospital setting in Switzerland. *BMC Health Services Research*, *18*(1), 1-11.

Harris, C., & Quinn Griffin, M. T. (2014). Nursing on empty: Compassion fatigue signs, symptoms, and system interventions. *Journal of Christian Nursing, 32*(2), 80-87.

Harris, D. A., Haskell, J., Cooper, E., Crouse, N., & Gardner, R. (2018). Estimating the association between burnout and electronic health record-related stress among advanced practice registered nurses. *Applied Nursing Research*, *43*, 36-41.

Harris, J. K. (2014). *An introduction to exponential random graph modeling.* SAGE Publications: Los Angeles, CA.

Heeter, C., Lehto, R., Allbritton, M., Day, T., & Wiseman, M. (2017). Effects of a technology-assisted meditation program on healthcare providers' interoceptive awareness, compassion fatigue, and burnout. *Journal of Hospice & Palliative Nursing*, *19*(4), 314-322.

Heinemann, L. V., & Heinemann, T. (2017). Burnout research: Emergence and scientific investigation of a contested diagnosis. *SAGE*, *7*(1), 1-12.

Hilcove, K., Marceau, C., Thekdi, P., Larkey, L., Brewer, M. A., & Jones, K. (2020). Holistic nursing in practice: Mindfulness-based yoga as an intervention to manage stress and burnout. *Journal of Holistic Nursing*, *39*(1), 29-42.

Himle, D. P., Jayaratne, S., & Thyness, P. (1989). The effects of emotional support on burnout, work stress and mental health among Norwegian and American social workers. *Journal of Social Service Research*, *13*(1), 27-45.

Himle, D. P., Jayaratne, S., & Thyness, P. (1991). Buffering effects of four social support types on burnout among social workers. *National Association of Social Workers*, 22-27. https://tinyurl.com/2p94pe8r

House, J. (1981). *Work stress and social support*. Reading, MA: Addison-Wesley.

HRSA. (2019). *Brief summary from the 2018 National Sample Survey of Registered Nurses, Rockville, Maryland*. U.S. Department of Health and Human Services, Health Resources and Services Administration, National Center for Health Workforce Analysis. https://bhw.hrsa.gov/sites/default/files/bhw/health-workforce-analysis/nssrn-summary-report.pdf

Huh, Y., Reigeluth, C.M., & Lee, D. (2014). Collective efficacy and its relationship with leadership in a computer-mediated project-based group work. *Contemporary Educational Technology, 5*(10), 1-21.

Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B. (2013). *Designing clinical research*. Lippincott Williams & Wilkins: Philadelphia, PA.

Institute of Medicine. (2011). *The future of nursing: Leading change, advancing health*. https://books.nap.edu/openbook.php?record_id=12956&page=R1

Jackson, E. R., Shanafelt, T. D., Hasan, O., Satele, D. V., & Dyrbye, L. N. (2016). Burnout and alcohol abuse/dependence among US medical students. *Academic Medicine*, *91*(9), 1251-1256.

Jameton, A. (1984). *Nursing practice: The ethical issues*. Englewood Cliffs, NJ: Prentice-Hall.

Johnson-Coyle, L., Opgenorth, D., Bellows, M., Dhaliwal, J., Richardson-Carr, S., & Bagshaw, S. M. (2016). Moral distress and burnout among cardiovascular surgery intensive care unit healthcare professionals: A prospective cross-sectional survey. *Canadian Journal of Critical Care Nursing*, *27*(4).

Khamisa, N., Oldenburg, B., Peltzer, K., & Ilic, D. (2015). Work related stress, burnout, job satisfaction and general health of nurses. *International Journal of Environmental Research and Public Health, 12*(1), 652-666.

Kickul, J., & Posig, M. (2001). Supervisory emotional support and burnout: An explanation of reverse buffering effects. *Journal of Managerial Issues*, *13*(3), 328-344.

Kim, H. S., & Yeom, H. A. (2018). The association between spiritual well-being and burnout in intensive care unit nurses: A descriptive study. *Intensive and Critical Care Nursing*, *46*, 92-97. https://doi.org/gdvgjb

Kleinbaum, D., Kupper, L., Nizam, A., & Rosenberg, E. (2014). *Applied regression analysis and other multivariable methods* (5th ed.)*.* Cengage Learning.

Kowalski, C., Ommen, O., Driller, E., Ernstmann, N., Wirtz, M. A., Köhler, T., & Pfaff, H. (2010). Burnout in nurses—The relationship between social capital in hospitals and emotional exhaustion. *Journal of Clinical Nursing, 19*, 1654-1663.

Krause, N. (1987). Understanding the stress process: Linking social support with locus of control beliefs. *Journal of Gerontology, 42*, 589-593.

Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress, 19*(3), 192-207. https://doi.org/10.1080/02678370500297720

Kutner, M., Nachtsheim, C., & Neter, J. (2016) *Applied linear regression models* (4th ed.). McGraw-Hill.

Laschinger, H. K. S., Borgogni, L., Consiglio, C., & Read, E. (2015). The effects of authentic leadership, six areas of worklife, and occupational coping self-efficacy on new graduate nurses' burnout and mental health: A cross-sectional study. *International Journal of Nursing Studies*, *52*(6), 1080-1089.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

Lazega, E., Mounier, L., Snijders, T., & Tubaro, P. (2012). Norms, status and the dynamics of advice networks: A case study. *Social Networks, 34*(30), 323-332.

Lee, E. J., Sung, M.-H., Ahn, H.-K., & Kim, Y. A. (2019). Effect of incivility, resilience, and social support experienced by nursing students on burnout in clinical practice. *Korean Journal of Women Health Nursing, 25*(1), 86-98.

Lee, S. M., & Sung, K. M. (2017). The effects of violence coping program based on middle-range theory of resilience on emergency room nurses' resilience, violence coping, nursing competency and burnout. *Journal of Korean Academy of Nursing, 47*(3), 332-344.

Leiter, M. P., & Maslach, C. (1988). The impact of interpersonal environment on burnout and organizational commitment. *Journal of Organizational Behavior*, *9*(4), 297-308.

Liu, X., Zheng, J., Liu, K., Baggs, J. G., Liu, J., Wu, Y., & You, L. (2018). Hospital nursing organizational factors, nursing care left undone, and nurse burnout as predictors of patient safety: A structural equation modeling analysis. *International Journal of Nursing Studies 86*, 82-89.

Llorens, S., Bakker, A. B., Schaufeli, W., & Salanova, M. (2006). Testing the robustness of the job demands-resources model. *International Journal of Stress Management, 13*(3). 378-391.

Lowe, M. A., Montgomery, A. P., Bakitas, M. A., & Hites, L. (2020). An exploratory study of the influence of perceived organizational support, coworker social support, the nursing practice environment, and nurse demographics on burnout in palliative care nurses. *Journal of Hospice & Palliative Nursing, 22*(6), 465-472.

Mahmoudi, S., Atashzadeh-Shoorideh, F., Rassouli, M., Moslemi, A., Pishgooie, A. H., & Azimi, H. (2017). Translation and psychometric properties of the Copenhagen burnout inventory in Iranian nurses. *Iranian Journal of Nursing and Midwifery Research*, *22*(2), 117.

Makary, M. A., & Daniel, M. (2016). Medical error—The third leading cause of death in the US. *British Medical Journal, 3*,353. https://doi.org/10.1136/bmj.i2139

Maslach, C. (1998). A multidimensional theory of burnout. In Cooper, C.L. (Ed.). *Theories of organizational stress*. (pp. 68-85). Oxford University Press.

Maslach, C. (2003). *The cost of caring*. Englewood Cliffs, NJ: Prentice-Hall.

Maslach, C. (2006). Understanding job burnout. In A. M. Rossi, P. L. Perrewé, & S. L. Sauter (Eds.), *Stress and quality of working life: Current perspectives in occupational health* (pp. 37-52). Information Age Publishing. https://tinyurl.com/4hn8j3fn

Maslach, C. (2017). Burnout: A multidimensional perspective. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 19-32). United Kingdom: Taylor & Francis.

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior, 2*(2), 99-113.

Maslach, C., & Leiter, M. P. (1997). *The truth about burnout: How organizations cause personal stress and what to do about it.* San Francisco, CA: Jossey-Bass.

Maslach, C., & Leiter, M. P. (2006). Burnout. s*tress and quality of working life: current perspectives in occupational health*, *37*, 42-49.

Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry, 15*(2), 103-111. https://doi.org/f8twbg

Matsubara, S., Matsubara, D., & Matsubara, T. (2019). Burnout and devastated feeling on patient's death: Universal to clinicians. *Australian Critical Care, 32*(4), 275-276.

McHugh, M. D., Kutney-Lee, A., Cimiotti, J. P., Sloane, D. M., & Aiken, L. H. (2011). Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. *Health Affairs (Project Hope)*, *30*(2), 202-210. https://doi.org/10.1377/hlthaff.2010.0100

Mefoh, P. C., Ude, E. N., & Chukwuorji, J. C. (2019). Age and burnout syndrome in nursing professionals: Moderating role of emotion-focused coping. *Psychology, Health & Medicine*, *24*(1), 101-107.

Meng, L., Liu, Y., Liu, H., Hu, Y., Yang, J., & Liu, J. (2015). Relationships among structural empowerment, psychological empowerment, intent to stay and burnout in nursing field in mainland China-based on a cross-sectional questionnaire research. *International Journal of Nursing Practice, 21*(3), 303-312.

Meredith, C. Schaufeli, W., Struyve, C., Vandecandelaere, M., Gielen, S., & Kyndt, E. (2020). 'Burnout contagion' among teachers: A social network approach. *Journal of Occupational and Organizational Psychology, 93,* 328-352.

Merriam-Webster (n.d.). *Merriam-Webster.com dictionary*. Retrieved February 1, 2022, from https://www.merriam-webster.com/

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med 6*(7):e1000097. doi:10.1371/journal.pmed1000097

Monroe, M., Morse, E., & Price, J. M. (2020). The relationship between critical care work environment and professional quality of life. *American Journal of Critical Care*, *29*(2), 145-149.

Montgomery, A. P., Azuero, A., Baernholdt, M. B., Loan, L. A., Miltner, R. S., Qu, H., Raju, D., & Patrician, P. A. (2020). Nurse burnout predicts self-reported medication administration errors in acute care hospitals. *Journal for Healthcare Quality, 43*(1), 13-23. https://doi.org/10.1097/jhq.0000000000000274

Muir, K., & Keim-Malpass, J. (2020). PNS37 Assessing the economic impact of registered nurse burnout attributed turnover. *Value in Health*, *23*, S290.

Muller, E., & Peres, R. (2019). The effect of social networks structure on innovation performance: A review and directions for research. *International Journal of Research in Marketing, 36*(1), 3-19.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *The Academy of Management Review, 23*(2), 242-266. https://doi.org/bxkbk8

Nantsupawat, A., Nantsupawat, R., Kunaviktikul, W., Turale, S., & Poghosyan, L. (2016). Nurse burnout, nurse-reported quality of care, and patient outcomes in Thai hospitals. *Journal of Nursing Scholarship*, *48*(1), 83-90.

Nascimento, J. O. V., Cardoso Meira, J. S. K., Pierin, A. M. G., & Souza-Talarico, J. N. (2019). Shift work of nursing professionals and blood pressure, burnout and common mental disorders. *Revista da Escola de Enfermagem da USP, 53*, e03443.

National Academies Press. (2019). *Taking action against clinician burnout: A systems approach to professional well-being*. Retrieved August 14, 2020. https://tinyurl.com/395btrn2

Neumann, J. L., Mau, L. W., Virani, S., Denzen, E. M., Boyle, D. A., Boyle, N. J., Dabney, J., De KeselLofthus, A., Kalbacker, M., Khan, T., Majhail, N. S. Murphy, E. A., Paplham, P., Parran, L., Perales, M. A., Rockwood, T. H., Schmit-Pokorny, K., Shanafelt, T. D., Stenstrup, . . .Burns, L. J. (2018). Burnout, moral distress, work-life balance, and career satisfaction among hematopoietic cell transplantation professionals. *Biology of Blood and Marrow Transplantation*, *24*(4), 849-860.

Nogueira, L. S., Sousa, R. M. C., Guedes, E. S., Santos, M. A., Turrini, R. N. T., & Cruz, D. A. L. M. (2018). Burnout and nursing work environment in public health institutions. *Revista Brasileira de Enfermagem, 71*(2), 336-42. https://doi.org/ggwhwj

Nowrouzi, B., Lightfoot, N., Larivière, M., Carter, L., Rukholm, E., Schinke, R., & Belanger-Gardner, D. (2015). Occupational stress management and burnout interventions in nursing and their implications for healthy work environments: A literature review. *Workplace Health & Safety*, *63*(7), 308-315.

Nursalam, N., Ekawati, S., & Wahyudi, A. S. (2020). The association of organizational commitment and personal factor with burnout syndrome and turnover intention in nurses. *Indonesian Nursing Journal of Education and Clinic*, *5*(2), 158-165.

Nursalam, N., Fibriansari, R. D., Yuwono, S. R., Hadi, M., Efendi, F., & Bushy, A. (2018). Development of an empowerment model for burnout syndrome and quality of nursing work life in Indonesia. *International Journal of Nursing Sciences, 5*(4), 390-395.

Orgambídez, A., & Almeida, H. (2019). Core burnout and power in Portuguese nursing staff: An explanatory model based on structural empowerment. *Workplace Health & Safety, 67*(8), 391-398.

Orgambídez-Ramos, A., Borrego-Alés, Y., Vázquez-Aguado, O., & March-Amegual, J. (2017). Structural empowerment and burnout among Portuguese nursing staff: An explicative model. *Journal of Nursing Management, 25*(8), 616-623.

Padilla Fortunatti, C., & Palmeiro-Silva, Y. K. (2017). Effort-reward imbalance and burnout among ICU nursing staff: A cross-sectional study. *Nursing Research, 66*(5), 410-416.

Palazoğlu, C. A., & Koç, Z. (2019). Ethical sensitivity, burnout, and job satisfaction in emergency nurses. *Nursing Ethics*, *26*(3), 809-822.

Parker, P. A., & Kulik, J. A. (1995). Burnout, self- and supervisor-rated job performance, and absenteeism among nurses. *Journal of Behavioral Medicine, 18***,** 581-599. https://doi.org/10.1007/BF01857897

Pérez-Francisco, D. H., Duarte-Clíments, G., del Rosario-Melián, J. M., Gómez-Salgado, J., Romero-Martín, M., & Sánchez-Gómez, M. B. (2020). Influence of workload on primary care nurses' health and burnout, patients' safety, and quality of care: Integrative review. *Healthcare, 8*(1), 12.

Pérula-de Torres, L. A., Atalaya, J. C. V. M., García-Campayo, J., Roldán-Villalobos, A., Magallón-Botaya, R., Bartolomé-Moreno, C., Moreno-Martos, H., Melús-Palazón, E., Liétor-Villajos, N., Valverde-Bolívar, F. J., Hachem-Salas, N., Rodríguez, L. A., Navarro-Gil, M., Epstein, R., Cabezón-Crespo, A., Moreno, C. M. V., Vega, R. A., Salguero, A. F., López, I. A., . . . The Collaborative Group of the MINDUUDD Study (2019). Controlled clinical trial comparing the effectiveness of a mindfulness and self-compassion 4-session programme versus an 8-session programme to reduce work stress and burnout in family and community medicine physicians and nurses: MINDUUDD study protocol. *BMC Family Practice*, *20*(1), 1-10.

Portero de la Cruz, S., Cebrino, J., Herruzo, J., & Vaquero-Abellán, M. (2020). A multicenter study into burnout, perceived stress, job satisfaction, coping strategies, and general health among emergency department nursing staff. *Journal of Clinical Medicine, 9*(4), 1007.

Prussia, G. E., & Kinicki, A. J. (1996). A motivational investigation of group effectiveness using social-cognitive theory. *Journal of Applied Psychology, 81*(2), 187-198. https://doi.org/10.1037/0021-9010.81.2.187

Qiao, Z., Chen, L., Chen, M., Guan, X., Wang, L., Jiao, Y., Yang, J., Tang, Q., Yang, X., Qiu, X., Han, D., Ma, J., Yang, Y., & Zhai, X. (2016). Prevalence and factors associated with occupational burnout among HIV/AIDS healthcare workers in China: A cross-sectional study. *BMC Public Health*, *16*(1), 1-7.

Ramirez-Baena, L., Ortega-Campos, E., Gomez-Urquiza. J. L., Cañadas-De la Fuente, G. R., De la Fuente-Solana, E. I., & Cañadas-De la Fuente, G. A. (2019). A multicentre study of burnout prevalence and related psychological variables in medical area hospital nurses. *Journal of Clinical Medicine, 8*(1), 92. https://doi.org/10.3390/jcm8010092

Reis, D., Xanthopoulou, D., & Tsaousis, I. (2015). Measuring job and academic burnout with the Oldenburg Burnout Inventory (OLBI): Factorial invariance across samples and countries. *Burnout Research*, *2*(1), 8-18.

Riggs, M., & Knight, P. (1994). The impact of perceived group success-failure on motivational beliefs and attitudes: A causal model. *Journal of Applied Psychology*, *79*(5), 755-766.

Robins, T. G., Roberts, R. M., & Sarris, A. (2018). The role of student burnout in predicting future burnout: Exploring the transition from university to the workplace. *Higher Education Research & Development*, *37*(1), 115-130.

Robinson, K. E., & Kersey, J. A. (2018). Novel electronic health record (EHR) education intervention in large healthcare organization improves quality, efficiency, time, and impact on burnout. *Medicine*, *97*(38).

Rodríguez-Rey, R., Palacios, A., Alonso-Tapia, J., Pérez, E., Álvarez, E., Coca, A., Mencía, S., Marcos, A., Mayordomo-Colunga, J., Fernández, F., Gómez, F., Cruz, J., Ordóñez, O., & Llorente, A. (2019). Burnout and posttraumatic stress in paediatric critical care personnel: prediction from resilience and coping styles. *Australian Critical Care*, *32*(1), 46-53.

Rotenstein, L. S., Torre, M., Ramos, M. A., Rosales, R. C., Guille, C., Sen, S., & Mata, D. A. (2018). Prevalence of burnout among physicians: A systematic review. *Journal of the American Medical Associatioin*, *320*(11), 1131-1150.

Rushton, C. H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care*, *24*(5), 412-420.

Sadati, A. K., Rahnavard, F., Heydari, S. T., Hemmati, S., Ebrahimzadeh, N., & Lankarani, K. B. (2017). Health sector reform, emotional exhaustion, and nursing burnout: A retrospective panel study in Iran. *Journal of Nursing Research, 25*(5), 368-372.

Sanchez-Moreno, E., de La Fuente Roldan, I., Gallardo-Peralta, L.P., & Barron Lopez de Roda. (2015). Burnout, informal social support and psychological distress among social workers. *British Journal of Social Work, 45*(8), 1-19.

Schaufeli, W., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. Taylor & Francis.

Schaufeli W. B., & Greenglass, E. R. (2001). Introduction to special issue on burnout and health. *Psychology & Health, 16*(5), 501-10. https://doi.org/dhkp8p

Schmitt, T. A. (2011). Current methodological considerations in exploratory and confirmatory factor analysis. *Journal of Psychoeducational Assessment, 29*(4), 304-321. https://doi.org/10.1177/0734282911406653

Scott, J. (2017). *Social network analysis* (4th ed.). SAGE Publications: Los Angeles, CA.

Sestili, C., Scalingi, S., Cianfanelli, S., Mannocci, A., Del Cimmuto, A., De Sio, S., Chiarini, M., Di Muzio, M., Villari, P., De Giusti, M. & La Torre, G. (2018). Reliability and use of Copenhagen burnout inventory in Italian sample of university professors. *International Journal of Environmental Research and Public Health*, *15*(8), 1708.

Shah, M.K, Gandrakota, N., Cimiotti, J. P., Ghose, N., Moore, M., & Ali, M. (2021). Prevalence of and factors associated with nurse burnout in the US. *JAMA Network, 4*(2), e2036469. https://doi.org/10.1001/jamanetworkopen.2020.36469

Shahzad, M. N., Ahmed, M. A., & Akram, B. (2019). Nurses in double trouble: Antecedents of job burnout in nursing profession. *Pakistan Journal of Medical Science, 35*(4), 934-939.

Shapiro, J. Zhang, B. & Warm, E. J. (2015). Residency as a social network: Burnout, loneliness, and social network centrality. *Journal of Graduate Medical Education*, *6*(4), 617-623.

Shi, Y., Guo, H., Zhang, S., Xie, F., Wang, J., Sun, Z., Dong, X., Sun, T., & Fan, L. (2018). Impact of workplace incivility against new nurses on job burn-out: A cross-sectional study in China. *BMJ Open*, *8*(4), e020461.

Shoham, D. A., & Messer, L. C. (2017). Social network analysis for epidemiology. In J. M. Oakes & J. S. Kaufman (Eds.). *Methods in social epidemiology* (2nd ed., pp. 212-238). San Francisco, CA: Jossey-Bass.

Siegrist, J. (1996). Adverse health effects of high-effort/low-reward conditions. *Journal of Occupational Health Psychology, 1*(1), 27-41.

Siegrist, J., Li, J., & Montano, D. (2014). Psychometric properties of the effort-reward imbalance questionnaire. https://tinyurl.com/5bpr4zp4

Skaalvik, E., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology, 99*(3), 611-625.

Skaalvik, E. M., & Skaalvik, S. (2019). Teacher self-efficacy and collective teacher efficacy: Relations with perceived job resources and job demands, feeling of belonging, and teacher engagement. *Creative Education*, *10*(07), 1400. https://doi.org/hjqm

Slatyer, S., Craigie, M., Heritage, B., Davis, S., & Rees, C. (2018). Evaluating the effectiveness of a brief mindful self-care and resiliency (MSCR) intervention for nurses: A controlled trial. *Mindfulness*, *9*(2), 534-546.

Smith, J. G., Morin, K. H., Wallace, L. E., & Lake, E. T. (2018). Association of the nurse work environment, collective efficacy, and missed care. *Western Journal of Nursing Research, 40*(6), 779-798. https://doi.org/10.1177/0193945917734159

Stanhope, J. (2017). Effort–reward imbalance questionnaire. *Occupational Medicine*, *67*(4), 314-315.

Sulaiman, C. F. C., Henn, P., Smith, S., & O'Tuathaigh, C. M. P. (2017). Burnout syndrome among non-consultant hospital doctors in Ireland: Relationship with self-reported patient care, *International Journal for Quality in Health Care*, *29*(5), 679-684. https://doi.org/10.1093/intqhc/mzx087

Swamy, L., Mohr, D., Blok, A., Anderson, E., Charns, M., Wiener, R. S., & Rinne, S. (2020). Impact of workplace climate on burnout among critical care nurses in the Veterans Health Administration. *American Journal of Critical Care*, *29*(5), 380-389.

Tawfik, D. S., Phibbs, C. S., Sexton, J. B., Kan, P., Sharek, P. J., Nisbet, C. C., Rigdon, J., Trockel, M., & Profit, J. (2017). Factors associated with provider burnout in the NICU. *Pediatrics*, *139*(5), e20164134. https://doi.org/10.1542/peds.2016-4134

Thrush, C. R., Gathright, M. M., Atkinson, T., Messias, E. L., & Guise, J. B. (2020). Psychometric properties of the Copenhagen burnout inventory in an academic healthcare institution sample in the U.S. *Evaluation & The Health Professions, 44*(4), 400-405.

Toh, S. G., Ang, E., & Devi, M. K. (2012). Systematic review on the relationship between the nursing shortage and job satisfaction, stress and burnout levels among nurses in oncology/haematology settings. *International Journal of Evidence-Based Healthcare*, *10*(2), 126-141.

Trochim, W. M., Donnelly, J. P., & Arora, K. (2016). *Research methods: The essential knowledge base* (2nd edition). Cengage Learning: Boston, MA.

Unruh, L. Y., & Zhang, N. J. (2014). Newly licensed registered nurse job turnover and turnover intent. *Nurses in Professional Development, 30*(5), 220-230.

Valente, T. (2010). *Social networks and health: Models, methods, and applications.* Oxford University Press: Oxford, NY

Van der Heijden, B., Mahoney, C. B., & Xu, Y. (2019). Impact of job demands and resources on nurses' burnout and occupational turnover intention towards an age-moderated mediation model for the nursing profession. *International Journal of Environmental Research and Public Health, 16*(11), 2011.

Van Bogaert, P., Timmermans, O., Weeks, S. M., van Heusden, D., Wouters, K., & Franck, E. (2014). Nursing unit teams matter: Impact of unit-level nurse practice environment, nurse work characteristics, and burnout on nurse reported job outcomes, quality of care, and patient adverse events—A cross-sectional survey. *International Journal of Nursing Studies, 51*(8), 1123-24.

Van Gerven, E., Vander Elst, T., Vandenbroeck, S., Dierickx, S., Euwema, M., Sermeus, W., De Witte, H., Godderis, L., & Vanhaecht, K. (2016). Increased risk of burnout for physicians and nurses involved in a patient safety incident. *Medical Care, 54*(10), 937-43.

van Vegchel, N., de Jonge, J., Bosma, H., & Schaufeli, W. (2005). Reviewing the effort-reward Imbalance model: Drawing up the balance of 45 empirical studies. *Social Science & Medicine, 60*, 1117-1131.

VanYperen, N. W. (1998). Informational support, equity and burnout: The moderating effect of self-efficacy. *Journal of Occupational and Organizational Psychology, 71,* 29-33.

Vidotti, V., Ribeiro, R. P., Galdino, M. J. Q., & Martins, J. T. (2018). Burnout syndrome and shift work among the nursing staff. *Revista Latino-Americana de Enfermagem, 26*, e3022.

Watson, C. B., Chemers, M. M., & Preiser, N. (2001). Collective efficacy: A multilevel analysis. *Personality and Social Psychology Bulletin*, *27*(8), 1057-1068. https://doi.org/bpzdjv

Wei, R., Ji, H., Li, J., & Zhang, L. (2017). Active intervention can decrease burnout in ED nurses. *Journal of Emergency Nursing*, *43*(2), 145-149.

Weigl, M., Stab, N., Herms, I., Angerer, P., Hacker, W., & Glaser, J. (2016). The associations of supervisor support and work overload with burnout and depression: A cross-sectional study in two nursing settings. *Journal of Advanced Nursing, 72*(8), 1774-1788.

Weinert, C. (1987). A social support measure: PRQ85. *Western Journal of Nursing, 9*, 589-602.

Wheeler, D., Vassar, M., Worley, J. A., & Barnes, L. (2011). A reliability generalization meta-analysis of coefficient alpha for the Maslach Burnout Inventory. *Educational and Psychological Measurement, 71*(1), 231-244.

White, E. M., Aiken, L. H., Sloane, D. M., & McHugh, M. D. (2019). Nursing home work environment, care quality, registered nurse burnout and job dissatisfaction. *Geriatric Nursing, 41,* 158-164.

WHO. (2019). *QD85 Burn-out*. Retrieved October 30, 2019, from https://tinyurl.com/43zrxnv8

Woo, T., Ho, R., Tang, A., & Tam, W. (2020). Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis. *Journal of Psychiatric Research*, *123*, 9-20.

Worley, J. A., Vassar, M., Wheeler, D. L., & Barnes, L. L. (2008). Factor structure of scores from the Maslach Burnout Inventory: A review and meta-analysis of 45 exploratory and

confirmatory factor-analytic studies. *Educational and Psychological Measurement*, *68*(5), 797-823.

Xie, Z., Wang, A. & Chen, B. (2011). Nurse burnout and its association with occupational stress in a cross-sectional study in Shanghai. *Journal of Advanced Nursing, 67*(7), 1537-1546. https://doi.org/10.1111/j.1365-2648.2010.05576.x

Yao, Y., Zhao, S., Gao, X., An, Z., Wang, S., Li, H., Li, Y., Gao, L., Lu, L., & Dong, Z. (2018). General self-efficacy modifies the effect of stress on burnout in nurses with different personality types. *BMC Health Services Research*, *18*(1), 1-9. https://doi.org/gd7h5w

Zhang, Y. Y., Han, W.-L., Qin, W., Yin, H.-X., Zhang, C.-F., Kong, C., & Wang, Y.-L. (2018). Extent of compassion satisfaction, compassion fatigue and burnout in nursing: A meta-analysis. *Journal of Nursing Management, 26*(7), 810-819.

Zhang, X. J., Song, Y., Jiang, T., Ding, N., & Shi, T. Y. (2020). Interventions to reduce burnout of physicians and nurses: An overview of systematic reviews and meta-analyses. *Medicine*, *99*(26), e20992. https://doi.org/10.1097/MD.0000000000020992

Zindel, M., Cappelucci, K., Knight, H. C., Busis, N., & Alexander, C. (2019). *Clinician well-being at Virginia Mason Kirkland Medical Center: A case study* [Discussion paper]. National Academy of Medicine. https://doi.org/10.31478/201908c

VITA

Amy K. Kiefer received her BSN in 2006 from University of Illinois at Chicago. After working as a perioperative nurse, she pursued a master's degree in the Leadership and Management in nursing track at North Park University in Chicago completing that degree in 2013.

Ms. Kiefer obtained a certification becoming a certified nurse in the operating room (CNOR). During Ms. Kiefer's sixteen-year career she has worked in several patient care units including inpatient and outpatient surgery at several hospitals including Northwestern Memorial Hospital, and Swedish Covenant Hospital. While working in the operating room at Swedish Covenant Hospital Ms. Kiefer served as the staff educator for the operating room and gastroenterology unit. Ms. Kiefer also worked in outpatient otolaryngology offices with a facial plastic surgeon and thyroid surgeon. In 2013 Ms. Kiefer entered academia.

Ms. Kiefer has been teaching undergraduate nursing students including both traditional and accelerated students since 2013 at several universities including North Park University, Chamberlain College of Nursing, and Loyola University Chicago. Most recently Ms. Kiefer has served as the Accelerated BSN Program Director at Loyola University where she started the undergraduate pre-licensure nursing program in 2021 and currently teaches in the program. Ms. Kiefer has a passion for teaching Foundations of Nursing Practice, Leadership, and Health Assessment and has done so over the past nine years.

Ms. Kiefer has presented at five conferences over the past seven years. She has presented both locally and nationally on patient, and nursing education topics. The latest presentation included a poster on the basis of her dissertation at the Midwestern Nursing Research Society conference in Schaumberg, Illinois in April 2022.

Ms. Kiefer has earned the privilege of being inducted into the Sigma Theta Tau Honor Society.