

BEST STRATEGIES TO ADDRESS BURNOUT AMONG HEATHCARE PROFESSIONALS:
AN INTEGRATIVE REVIEW

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Kimberly Ann Delbo

Liberty University

Lynchburg, VA

December 2022

BEST STRATEGIES TO ADDRESS BURNOUT AMONG HEATHCARE PROFESSIONALS:
AN INTEGRATIVE REVIEW

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Kimberly Ann Delbo

Liberty University

Lynchburg, VA

December 2022

Scholarly Project Chair Approval:



Date

ABSTRACT

The purpose of this integrative literature review (ILR) is to provide a comprehensive summary and analysis of past empirical and theoretical literature related to the phenomenon of burnout while sharing a synthesis of literature. This ILR explores, critiques, summarizes, and analyzes best practices and interventions to address burnout and promote engagement and well-being among health care workers within acute care hospitals. The scientific basis for this ILR was the premise that a relationship exists between burnout interventions and organizational cultures which can be positively influenced by relational and social leadership styles that reduce work-related stressors and create positive, professional, healthy work environments. The ILR was performed following the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* reporting guidelines. Additionally, Melnyk's level of evidence pyramid hierarchy and Whittmore and Knaf'l's (2005) constant comparison method was used. A total of 16 studies published from 2017 to 2022 were suitable for analysis. The studies in this review evaluated a wide range of interventions to reduce burnout among healthcare professionals. The information gathered as a result of the literature review may be used by healthcare leaders and executives to make recommended practice changes related to implementing best practices to address burnout within hospitals.

Keywords: Burnout, healthcare workers, hospital, well-being, occupational stress, interventions, workplace culture

BEST STRATEGIES TO ADDRESS BURNOUT AMONG HEATHCARE PROFESSIONALS:
AN INTEGRATIVE REVIEW

© 2022

Kimberly Ann Delbo

All Rights Reserved

Dedication

I would like to dedicate this manuscript in honor of my beloved mother, role model, mentor, and best friend, Marion Lee Bridy, who was promoted to glory with our heavenly Father and Savior, Jesus Christ, on February 5, 2022.

Acknowledgments

My sincere gratitude to all those who helped make this project possible and have personally supported my pursuing the Doctorate of Nursing Practice. First, I thank my Heavenly Father and Lord and Savior Jesus Christ, the Giver of every good and perfect gift. He was my Rock through this journey as I concurrently travelled through a perfect storm of challenges over the last several years. He has given me the grace and grit to persevere through the difficult times and a heart of love for humanity for which I will be eternally grateful.

Second, I would like to express my deep appreciation to my husband, Robert Delbo, who was a tremendous blessing and support to me as I took on this endeavor in pursuit of a lifelong dream and calling to serve. He was my anchor and humbly served humanity alongside me on the frontline during the COVID-19 pandemic. I also acknowledge my son, Gabriel Delbo, a living testimony of what it means to sacrifice greatly for those you love. Gabriel's heart of obedience to the Lord has been a tremendous joy to my heart as I navigated this journey. Gabriel is a professional, caring, and compassionate registered nurse. It is those like Gabriel, as well as my nursing students who give me hope to press on knowing that future generations of nurse leaders deserve healthy work environments and systems that provide quality, person-centered care to patients while restoring joy to practice. I would also like to thank my project chair, Dr. Dottie Murphy, who has graciously shared her heart of knowledge, wisdom, and expertise through the entire process. I would also like to thank Drs. Sharon Kopsis and Ronni Rothwell for their unwavering support and prayers which provided ongoing encouragement, empathy, and reassurance while always pointing me to the Lord.

To God be all glory, praise, and thanksgiving!

TABLE OF CONTENTS

Acknowledgments	6
SECTION ONE: FORMULATING THE REVIEW QUESTION.....	10
Introduction.....	10
Defining Concepts and Variables	11
Rationale for Conducting the Review	12
Problem Statement.....	13
Purpose of this ILR.....	16
IR Question.....	17
Data Collection Process	17
Inclusion and Exclusion Criteria of the Literature.....	17
Literature Search Results.....	18
Conceptual Framework.....	19
SECTION TWO: COMPREHENSIVE AND SYSTEMATIC SEARCH	20
Search Organization and Reporting Strategies.....	20
Terminology.....	22
SECTION THREE: METHODS AND MANAGING THE COLLECTED DATA	22
SECTION FOUR: QUALITY APPRAISAL	23
Sources of Bias.....	23
Internal Validity.....	24
Appraisal Tools (Literature Matrix).....	24
Applicability of Results.....	24
Reporting Guidelines	25
SECTION FIVE: DATA ANALYSIS AND SYNTHESIS	25
Data Analysis Methods: Constant Comparison	25
Descriptive Results.....	26
Synthesis.....	28
Ethical Considerations.....	30
SECTION SIX: DISCUSSION	30
Conclusion	30
Implications for Practice/Future Work	30
Dissemination	31
REFERENCES.....	32
TABLES.....	39
Appendix A	42
Appendix B	76
Appendix C.....	77
Appendix D.....	80
Appendix E.....	81

Appendix F 82

List of Abbreviations

American Association of Colleges of Nursing (AACN)

American Medical Association (AMA)

Collaborative Institutional Training Initiative (CITI)

Coronavirus (COVID-19)

Depersonalization (DP)

Doctor of Nursing Practice (DNP)

Emotional Exhaustion (EE)

Healthcare Organizations (HCO)

Healthcare Workers (HCWs)

Institutional Review Board (IRB)

Integrative Literature Review (ILR)

International Classification of Diseases 11th Revision (ICD-11)

Level of Evidence (LOE)

Maslach Burnout Inventory (MBI)

National Academies of Medicine (NAM)

United States (U.S.)

World Health Organization (WHO)

SECTION ONE: FORMULATING THE REVIEW QUESTION

Introduction

Burnout among healthcare workers (HCWs) is a pervasive public health crisis in the United States and global occupational problem. The prevalence of burnout is at an all-time high. Before the Coronavirus (COVID-19) pandemic, more than half of physicians and a third of nurses reported experiencing symptoms of burnout (American Medical Association [AMA], 2016; Brooks Carthon et al., 2020; National Academy of Medicine [NAM], 2019; Shanafelt et al., 2015). Among HCWs, burnout is not a new concern but has gained increased national attention due to COVID-19. Recently, owing to the pandemic, added social and job-related factors have increased the risk of burnout among HCWs (Leo et al., 2021). Burnout among HCWs is therefore a high priority for healthcare organizations (HCOs).

Burnout is a syndrome which consists of depersonalization or cynicism, emotional exhaustion, and a diminished sense of personal accomplishment or effectiveness (Panagioti et al., 2017; Shanafelt & Noseworthy, 2017; West et al., 2018; Zhang et al., 2020). Burnout is driven primarily by stress and distress in the workplace (Panagioti et al., 2017, p. 196). COVID-19 has shined a light on the weaknesses within the broken healthcare system, including the pervasive public health issue of healthcare provider burnout. There are concerns regarding the effects of heavier workloads, time pressures, limited resources, and increased patient acuity on healthcare providers, all of which can increase stress in the workplace (Brooks Carthon et al., 2020). The pandemic swept through the world, demanding more attention be paid to physical and mental health, especially among front-line workers (Zhang et al., 2020).

Defining Concepts and Variables

Burnout was first defined and applied to HCWs by Freudenberger (1974), and later researched by others (Leo et al., 2021; West et al., 2018). In this integrative literature review (ILR), burnout is defined according to the World Health Organization (World Health Organization [WHO], 2019) and the International Classification of Diseases (ICD-11) diagnostic manual. As such, “burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed” (Sharifi et al., 2021, p. e7). Being a work-related syndrome, burnout is characterized by three dimensions: feelings of energy depletion, being used-up at the end of the day, fatigue, or exhaustion, also known as emotional exhaustion (EE); increased mental distance from one’s job or negative feelings towards one’s career, also known as depersonalization (DP); and a sense of reduced personal accomplishment (PA) or feelings of ineffectiveness (West et al., 2018; WHO, 2019; Zhang et al. 2020). Depersonalization includes “feelings of treating patients as objects instead of humans and becoming more callous towards patients” (West et al., 2018, p. 516). According to Leo et al. (2021), burnout among HCWs is an “unexpected consequence of an organizational culture unable to balance the personal identity of the worker with that of the work organization and the social context, and of the consequent continuous mental effort to cope with the perceived friction” (p. 1).

Shanafelt et al. (2017) found that employee engagement is the antithesis of burnout. Engagement is defined as “a positive, fulfilling, and work-related state of mind that’s characterized by vigor, dedication, and absorption” (Bergstedt & Wei, 2020, p. 48). Engaged employees report decreased feelings of burnout and increased job satisfaction (Bergstedt & Wei, 2020, p. 48).

Rationale for Conducting the Review

Burnout among HCWs has many negative consequences for healthcare professionals, healthcare systems, and patient safety and satisfaction (Leo et al, 2021; Shanafelt & Noseworthy, 2017). Among HCWs, burnout has personal and professional repercussions and was linked with broken relationships, decreased work satisfaction, alcohol and substance abuse, as well as depression and suicidal ideation (Shanafelt & Noseworthy, 2017; Zhang et al., 2020, p. 2). The professional implications of burnout among clinicians can include high job turnover, decreased productivity and professional effort, high rates of absenteeism, early retirement, and intention to leave their current place of employment (Brooks Carthon et al., 2020; Panagioti et al., 2017; Shanafelt & Noseworthy, 2017, p. 130). The epidemic of burnout among healthcare providers has associated threats to patient care, including lower patient satisfaction, increased medical errors, and decreased quality care outcomes (Brooks Carthon et al., 2020; Panagioti et al., 2017; Zhang et al. 2020).

Numerous interventions to reduce burnout among HCWs have been published (Zhang et al., 2020). Interventions to address burnout range from being individual-focused, organizational-focused, or a combination of the two (Zhang et al., 2020). Unfortunately, most healthcare organizations assume that burnout and professional satisfaction are solely the HCW's responsibility (Shanafelt & Noseworthy, 2017). This frequently results in healthcare organizations pursuing a narrow list of 'solutions' such as, stress management workshops and mindfulness or resilience training for individuals while failing to make any meaningful progress to decrease the root causes of burnout (Shanafelt & Noseworthy, 2017). It is essential for HCOs to not neglect organizational factors which are the primary drivers of burnout among nurses, technicians, and physicians (Shanafelt & Noseworthy, 2017, p. 131).

Further, COVID-19 has placed a significant strain on the healthcare system. The pandemic has impacted frontline employees in many ways with unprecedented demands. These demands include providing healthcare services and resources at maximum capacity with additional, extensive responsibilities at work, sending staff to unfamiliar clinical settings, a lack of or scarcity of personal protective equipment, restrictions on or cessation of routine services, concerns for job and financial security, and increased risk of complaints or accusations of negligence (Leo et al., 2021; Wu et al., 2021).

HCWs have been inundated with much uncertainty concerning protective measures, while being faced with ethical and moral decisions (Leo et al., 2021). They have had to make life-or-death decisions without optimal support, anguish over the death of patients and colleagues, risked infection to themselves and their families, and endured social isolation due to physical distancing (Leo et al. 2021; Wu et al., 2021). These travails have resulted in ongoing work-related stress and overwhelming pressure impacting employee mental health.

The need to explore best-practice interventions that target burnout among HCWs and promote engagement, well-being, and enhance their mental health has become increasingly evident (Zhang et al., 2020). The rationale for conducting this ILR is to explore, review, critique, summarize, and analyze best practices and interventions that address burnout and alleviate sources of stress among HCWs in acute care hospitals.

Problem Statement

Our healthcare system drives many HCWs to burnout, who are already at an increased risk of mental health challenges, resulting in a significant portion choosing to leave the healthcare workforce early (U.S. Department of Health and Human Services, 2022). The difficult work environments of HCWs strain their physical, emotional, and psychological wellness. In the

workplace, numerous factors have been identified that impact employees' mental health (Gray et al., 2019). Among them are:

- Job demands
- Low support at the workplace
- Lack of control over their duties
- Imbalance between effort and reward
- Low organizational relational justice
- Low organizational procedural justice
- Organizational change
- Being a temporary employee
- Job insecurity
- Work hours
- Bullying
- Role stress (Gray et al., 2019).

Non-work determinants include family status and social support networks, which are also important predictors of workers' mental health (Gray et al., 2019). Due to the workplace conditions given above, depression, anxiety, post-traumatic stress disorder, workplace violence and stigma seeking care, HCWs often experience poor mental health (Gray et al., 2019, p. 2).

Wu et al. (2019) concluded that mental health and well-being has become a growing concern among employers and healthcare systems, especially following COVID-19 (p. e925). Stress-induced mental conditions severely impact the U. S. economy. Wu et al. (2021) wrote that the cost of depression is estimated at "\$210.5 billion with half of that sum paid for by employers" (p. e925). The economic burden is magnified in healthcare systems as depression

often occurs with other co-morbidities. The financial impact of poor mental health goes beyond the direct cost of treatment. Indirect costs, such as lost productivity from absenteeism or presenteeism, were estimated globally to be \$1.7 trillion in 2010, with costs expected to triple by 2030 (Wu et al., 2021). Work has been identified as a leading cause of stress among adults in the U.S., and linked to poor mental health (Wu et al., 2021). Workplace stressors, such as poor social support, long working hours, unclear or ambiguous work roles, and management style are associated with an increased risk for mental illness (Wu et al., 2021).

Lack of employee engagement remains an ongoing concern in the U.S. According to Gallup's *State of the American Workplace* survey (2017), 51% of American workers arrive at their jobs not engaged and willing only to fulfill the minimum requirements. Fifty-four percent feel their job just pays the bills, and 69% believe recognition is lacking at work (Gallup, 2017). According to Gallup (2017), disengaged workers cost U.S. businesses a minimum of \$483 billion each year.

Amid the 'Great Resignation,' a shortage of HCWs is a critical issue in many countries (Nantsupawat et al., 2017). Burnout, turnover, staff shortages, and incivility are major concerns for healthcare leaders. It is imperative that HCOs explore ways to promote work engagement, the antithesis of burnout, among HCWs in acute care hospitals (Bergstedt & Wei, 2020). Nantsupawat et al. (2017) found that high levels of turnover contribute to employee shortages, job dissatisfaction, intention to leave, and burnout among nurses. An established body of research supports the contention that organizational culture and work environment for HCWs can lead to burnout, job dissatisfaction, and intention to leave (Braithwaite et al., 2017; DeChant et al., 2019; Nantsupawat et al. 2017). There is an increasing need for healthcare executives to provide comprehensive, evidence-based, cost-effective strategies to target burnout, employee

engagement, and well-being. Among these interventions are the need to cultivate a caring workforce culture that promotes healthcare workforce well-being.

Purpose of this ILR

The overall aim of this review is to provide a comprehensive summary and analysis of empirical or theoretical literature related to burnout and sharing this synthesis of research related to the subject area to interested parties, including healthcare leaders and executives (Whittemore & Knafl, 2005). These researchers found that the ILR is the broadest type of research review method and includes various methodologies such as experimental and non-experimental research. The ILR “contributes to the presentation of varied perspectives on a phenomenon of concern” (Whittemore & Knafl, 2005, p. 547). The purpose of this ILR is to critique and synthesize relevant literature to determine the state of the research related to burnout (Toronto & Remington, 2020). This included exploring, reviewing, critiquing, summarizing, and analyzing relevant literature published between 2017-2022 to identify best practices and interventions that address burnout and promote engagement and well-being among HCWs within acute care hospitals.

Recent studies described burnout as a complicated phenomenon, and numerous gaps in knowledge remain (West et al., 2018; Zhang et al., 2020). It has also revealed that burnout among HCWs is best addressed using a bundled strategy (West et al., 2018; Zhang et al., 2020). For example, effective solutions are implemented in combination (West et al., 2018) and seen as the responsibility of both the HCW and the employer. It has also revealed that change is required in workplace culture (Leo et al., 2021, U.S. Department of Health & Human Services, 2022) to reduce the stigma associated with mental illness. System level improvements and investment in work environments need to be prioritized (Brooks Carthon et al., 2020; Leo et al., 2021). Further,

relational and social leadership strategies and development have been shown to promote positive, professional and healthy workplace environments, engagement, and reduced burnout among HCWs (Bergstedt & Wei, 2020; Boamah et al., 2018; Regan et al., 2016).

For healthcare to fulfill its mission and provide quality care, a concerted effort is needed. All stakeholders must work together to develop and use strategies that create healthy work environments that reduce burnout among HCWs (West et al., 2018). It is hoped that the findings from this ILR will be used to impact healthcare practice and policy by providing information that can be used to empower healthcare leaders, executives, and clinical managers to design practical methods to reduce burnout and promote engagement and well-being among HCWs.

ILR Question

What are the best strategies to address burnout and promote engagement and well-being among healthcare workers within the hospital care setting?

Data Collection Process

The reviewer completed the required Collaborative Institutional Training Initiative training (see Appendix E) and obtained approval from Liberty University's IRB (see Appendix F). Following IRB approval, a well-defined, systematic, and transparent literature search with clear parameters was conducted. This process was needed to enhance the rigor of the ILR and avoiding incomplete or biased searches which can result in inadequate results (Whittemore & Knafel, 2005). Database searching using filters and several strategies, as well as clearly defined eligibility criteria were used to collect data for this review.

Inclusion and Exclusion Criteria of the Literature

After formulating a clear review question, according to Toronto and Remington (2020), the reviewer identified inclusion and exclusion criteria to refine the search. Inclusion criteria for

this ILR consisted of peer-reviewed studies that identified best practices and strategies to address burnout among HCWs in acute hospital care settings. Book reviews, chapters, non-scholarly articles, dissertations, abstracts, as well as journal articles that had a narrow list of interventions were excluded. Interventions or strategies of interest were those that sought to improve burnout among HCWs at a system or organizational level while using a bundled strategy. There were no restrictions regarding study design for this ILR.

The search and selection of literature was conducted in consultation with a reference librarian at the Falwell Library in Lynchburg, Virginia and included searching several medical databases to identify peer-reviewed, full text articles written in English which were published between 2017 and 2022. The subject was burnout in HCWs and best practice interventions. The following key terms were used: *Health care workers, healthcare professionals, healthcare providers, physicians, nurses, burnout, burn-out, occupational stress, compassion fatigue, interventions, strategies, best practices, hospitals, acute care setting, work environment, organizational environment, workplace culture, organizational culture, and healthy work environments, leadership or management*. The disciplines used when conducting the initial search included medicine, nursing, and public health. The review of literature consisted of searching primarily four databases: *Cochrane Library, PubMed, MEDLINE, and CINAHL*. The *EBSCO* platform was also used, as was *Google Scholar* when searching for grey literature.

Literature Search Results

The initial search found 15,695 articles for the terms *burnout, burn-out, occupational stress, compassion fatigue, healthcare workers, interventions, strategies, or best practices*. The search was narrowed by adding the terms *workplace environment, work environments, organizational environment, working conditions, or workplace culture, hospital, hospital setting,*

or *acute care setting*, and *leadership* or *management*. This reduced the number to 282 articles. Following additional screening and the removal of duplicates, 164 articles remained. After applying inclusion and exclusion criteria, 34 full-text articles were assessed for eligibility. The article titles, abstracts, purpose, findings, and conclusions were screened to establish relevance to the review question (Toronto & Remington, 2020) and further reduced the list to 16 articles which were further reviewed and examined for rigor using Melnyk's LOE hierarchy tool (see Appendix A).

The remaining articles were categorized by theme according to the type of intervention (see Table 3 and Appendix B). Grey literature obtained included four documents from the World Health Organization, U.S. Department of Health and Human Services, and the National Academy of Medicine which added to the robustness and timeliness of the topic and provided statistical information. The selection process of literature was documented using the PRISMA Flow Diagram (see Appendix C; Moher et al., 2009).

Conceptual Framework

The conceptual framework used to structure and organize this ILR was Wittemore and Knafl's (2005) five-stage process described in the constant comparison method. This framework supported the methodology of the ILR, as described in Section Three of this review. The constant comparison method is a single overarching approach used in a broad array of qualitative designs that convert extracted data into systematic categories (Wittemore & Knafl, 2005). This facilitates identification of patterns, themes, variations, and relationships. The framework allows for extracting, comparing, and categorizing data (Wittemore & Knafl, 2005). These categories are then compared to enhance the analysis and synthesis process.

Each article for this ILR was evaluated, compared, and analyzed. Conclusions were drawn based on recurring themes in the findings as they related to individuals, structures, or

organizations, and bundled interventions to reduce burnout (Toronto & Remington, 2020). The rationale for this ILR was that a relationship exists between burnout interventions and organizational cultures which can be positively influenced by relational and social leadership styles. These leadership styles can reduce work-related stressors and create positive, professional, and healthy work environments. This ILR used the PRISMA reporting guidelines (Moher et al., 2009). Additionally, Melnyk's LOE Pyramid hierarchy was used (see Table 2) (Melnyk & Fineout-Overholt, 2015). Appendix A is a literature matrix and analysis using the LOE hierarchy of Melnyk and Fineout-Overholt (2015). Table 3 includes categories and themes identified based on the studies. Categories consist of person-directed interventions, organizational-directed interventions, and combined interventions.

SECTION TWO: COMPREHENSIVE AND SYSTEMATIC SEARCH

Search Organization and Reporting Strategies

A systematic search was used for this review. Four medical databases were used: *Cochrane Library*, *PubMed*, *MEDLINE*, and *CINHAL*. As noted in the section on inclusion and exclusion criteria, the *EBSCO* platform was also used. Also, *Google Scholar* was used to find relevant grey literature. The studies used were categorized according to Melnyk's LOE hierarchy (see Table 2) (Melnyk & Fineout-Overholt, 2015, p. 92) and by theme.

As indicated in the literature matrix in Appendix A and Table 2, Level I is the highest level of evidence and Level VI the lowest:

- Level I uses systematic reviews and meta-analyses of randomized control trials (RCTs). Nine articles were classified as Level I: Aryankhesal et al. 2019; Braithwaite et al., 2017; Dechant et al., 2019; Goedhart et al., 2017; Leo et al.,

2021; Panagioti et al., 2017; Pospos et al., 2018; Sharifi et al., 2021; Zhang et al., 2020.

- Level II is RCTs. No articles used in this ILR were given that level.
- Level III is assigned to controlled cohort and non-randomized studies. No articles were assigned to this level.
- Level IV is given to uncontrolled cohort studies. No articles from this level were used.
- Level V evidence is from reviews of case studies, descriptive and qualitative studies, evidence-based practice projects, or quality improvement projects. This review had four articles with that classification: Boamah et al., 2018; Brooks Carthon et al., 2020; Duan et al., 2019; Nantsupawat et al., 2017.
- Level VI evidence is expert opinion by someone who demonstrates a high level of knowledge of the topic. Three articles were assigned to this level: Shanafelt & Noseworthy, 2017; Sultana et al., 2020; West et al., 2018.

The LOE hierarchy tool specifies the study purpose, sample characteristics, methods, study results, study limitations, and determination if evidence could be utilized to support the practice change as it relates to interventions seeking to reduce burnout among HCWs. It also provides evidence to defend the ILR, as well as the value it will bring to health care practice. The information gathered because of this review can be used by healthcare leaders and executives to make recommended practice changes related to applying best practices to address burnout in hospitals. It can also identify interventions at the organizational or system level as they relate to culture change and leadership.

Terminology

In this review, the term *platform* refers to the software used by a specific database provider (e.g., ‘the EBSCO platform’) (Toronto & Remington, 2020). *Database* refers to a searchable collection of electronically published materials, including a collection of peer-reviewed journals (Toronto & Remington, 2020). *Search engine* describes systems, such as Google Scholar, which enables the use of the World Wide Web to search for grey literature (Toronto & Remington, 2020).

SECTION THREE: METHODS AND MANAGING THE COLLECTED DATA

The methodology used in this ILR is represented by five stages which guided the process: Problem formation, literature search, data evaluation, data analysis, and presentation (Toronto & Remington, 2021; Whitemore & Knafel, 2005). During the problem formation stage, the broad purpose and question for the review are clearly stated. The literature search stage, as noted in Section I, utilizes a comprehensive and replicable search strategy to collect data and predetermined inclusion and exclusion criteria. In the data evaluation stage, the literature and data are methodically appraised for quality and relevance. The data analysis stage consists of data abstraction, comparison, and synthesis of literature. The presentation stage delineates the interpretation of findings, implications for research, practice, and policy, as well as limitations of the ILR and a plan for the dissemination of findings (Toronto & Remington, 2021, p. 5).

As noted in the Conceptual Framework, Whitemore and Knafel’s (2005) constant comparison method was used. This method allows for identifying categories, patterns, relationships, and themes. In this review, comparisons were made using an iterative approach between data sources. The approach was systematic and involved data reduction, data display, data comparison, as well as drawing conclusions and verification (Whitemore & Knafel, 2005).

Literature from preliminary searches was reviewed, evaluated, appraised, and synthesized using Melnyk's LOE hierarchy (Melnyk & Fineout-Overholt, 2015). Article abstracts were read and evaluated for relevancy. PRISMA, a set of guidelines that provides standardized terminology to safeguard the trustworthiness and quality of systematic reviews, meta-analyses, and ILRs (see Appendix C; Moher et al., 2009), was also used. PRISMA was used for critically appraising and minimizing bias while increasing the rigor of the review when screening for the article selection process (Moher et al., 2009).

SECTION FOUR: QUALITY APPRAISAL

Sources of Bias

Each study was assessed for potential sources of bias in a transparent, methodical, and reproducible manner. Although only one reviewer was used for this ILR, the risk of bias was minimized due to careful systematic selection and screening of the articles for relevancy, organization, management of collected data, documentation, and reporting within the literature matrix and associated tables.

The main source of bias in studies selected for this review is external validity. Not all studies in this review used the same intervention, so generalizability of results was limited (Aryankhesal et al., 2019; DeChant et al., 2019). Also, the number of participants in 19% of the studies were too low, resulting in reduced statistical strength, an increase in inconsistency, and therefore reduced the effectiveness of the intervention (Aryankhesal et al., 2019; Dechant et al., 2019; Pospos et al., 2018). The cross-sectional study design was used in 25% of the studies, thereby limiting the ability to identify causality among the variables (Boamah et al., 2018; Brooks Carhon et al., 2020; Duan et al., 2019; Sharifi et al., 2021). Another 12% of the studies

revealed a potential for response and recall bias related to self-reported measures (Boamah et al., 2018; Duan et al., 2019).

Internal Validity

By engaging in a judicious quality appraisal of the risk of bias, the reviewer also evaluated internal validity (Toronto & Remington, 2020). As only one researcher conducted this ILR a risk of bias is present in this review. By selecting literature that demonstrated relevance to the review question and phenomenon of interest, while leveling and critiquing articles using Melnyk's framework, the reviewer was able to mitigate and minimize the risk of bias (Melnyk & Fineout-Overholt, 2015).

Appraisal Tools (Literature Matrix)

The primary appraisal tool for this review was Melnyk's LOE hierarchy literature matrix (Melnyk & Fineout-Overholt, 2015). The matrix clearly shows the purpose of each study, sample characteristics, methods, results, limitations, and level of evidence. Overall, there was a high level of quality evidence and rigor in the articles used to answer the review question.

Applicability of Results

The literature matrix clearly indicates the applicability of results. Each publication in the review provides relevant or useful information when seeking to answer the question under study. When investigating the phenomenon of interest, all 16 publications were determined to be relevant and provided information to support change when seeking to promote engagement and address burnout among healthcare workers by cultivating positive, professional, healthy workplace environments.

The themes identified in the selected studies for this review were analyzed for applicability of results to understand the phenomenon of burnout among healthcare workers and

delineate viable solutions. The major themes identified include three interventional categories: individual based, organizational or system-based interventions, and cultural, combined or bundled interventions. These themes are applicable to current health system efforts when seeking to apply best practice strategies to address the pervasive problem of burnout among the healthcare workforce.

Reporting Guidelines

When conducting the integrative review, the PRISMA guideline and Melnyk's LOE framework was utilized to minimize bias and increase quality and transparency (Melnyk & Fineout-Overholt, 2015; Moher et al., 2009). PRISMA was utilized to critically appraise literature (Appendix C). Additionally, the systematic approach used to conduct the literature search is presented in the PRISMA flowchart (Appendix D). Whitemore and Knalf's (2005) constant comparison method was also used.

SECTION FIVE: DATA ANALYSIS AND SYNTHESIS

Data Analysis Methods: Constant Comparison

The primary goal of this review and data analysis was to answer the ILR question ("What are the best interventions to address burnout among HCWs within the acute hospital care setting?"). Using Whitemore and Knafl's (2005) constant comparison method, articles related to the phenomenon of burnout were ordered, categorized, and summarized. Interventions in the literature were categorized according to themes of the interventions and have been given above. Each article was placed in the literature matrix according to the LOE hierarchy categorizing system (Melnyk & Fineout Overholt, 2015). This process allowed for repeated comparisons among the sources and the identification of topic relevancy and synthesis of themes noted during the analysis process.

Data Reduction

Utilizing Melnyk and Fineout-Overholt's LOE literature classification system, each article in this ILR was described according to the criteria above. Also, the purpose, sample size, methods, results, level of evidence, limitations, and utility of information were identified. The articles were then further categorized according to the interventions presented to address burnout among HCWs.

Data Display

Data display was used to place data into subgroups or themes as they relate to the interventions presented in the literature. Two data display tables are included in this ILR. The first table categorized all 16 articles in terms of an LOE matrix table (Appendix A). The second data display is a thematic matrix which categorizes interventions to address burnout among HCWs according to the level of impact (see Table 3). This table allows for data visualization as it pertains to the clinical question under study.

Data Comparison

Sequential data analysis involved data comparison utilizing patterns, themes, or relationships depicted using a conceptual map (see Appendix B) illustrates the relationship between the clinical question and identified themes in the data. These identified themes interventional levels of impact, including those intended for individuals, organizations, and cultural or combinational/blended strategies to address burnout.

Descriptive Results

This ILR examined 16 articles having various designs and data sources that sought to better understand the best interventions to promote well-being and address burnout among HCWs. This review has articles published between 2017-2022. Presentation of data, including

identified themes and a conceptual model are shown in Appendices A, B, and Table 3. This ILR presented studies to answer the clinical question on using cultural or combinational/blended interventional strategies to address healthcare provider burnout.

Studies included in the review examined burnout among physicians ($n = 6$), nurses ($n = 5$), and healthcare providers and/or students ($n = 4$). One study explored burnout among both physicians and nurses. Most studies included in the review used the *Maslach Burnout Inventory* (MBI) to assess burnout. The studies evaluated a broad range of interventions, as previously described.

Individually-focused interventions included small group programming, self-care workshops, communication skills training, mindfulness training (meditation, yoga, and relaxation touch therapy), energy healing, aromatherapy, massage, as well as initiatives that target stress management and used web-based tools and mobile applications (Aryankesal et al., 2019; Panagioti et al., 2017; Pospos et al., 2018; Sultana et al., 2020; West et al., 2018; Zhang et al., 2020). Structural or organizational interventions included: teamwork initiatives which promote involvement of all HCWs in management decision; integrating a structured multi-disciplinary team to provide psychosocial support for HCWs; leadership training and awareness of burnout; improving workload and workflow processes; shortening length of shifts; and providing practical support for frontline HCWs (Aryankesal et al., 2019; Brooks Carthon et al., 2020; Dechant et al., 2019; Duan et al., 2019; Goedhart et al., 2017; Panagioti et al., 2017; Shanafelt et al., 2017; Sharifi et al., 2021; Sultana et al., 2020; West et al., 2018; Zhang et al., 2020).

Cultural, combinational, or blended strategies are most beneficial when seeking to address burnout among HCWs (Shanafelt & Noseworthy, 2017; West et al., 2018; Zhang et al.,

2020). Interventions in this category include those that promote a psychologically safe workplace or blame-free environment which shares challenges, ethical and emergency issues, and incidents, the introduction of a radical change in culture which recognizes humanity, emphasize shared responsibility and values, highlight a culture that represents relational and social leadership models; and creating a healthy work environment and well-being (Aryankesal et al., 2019; Boamah et al., 2018; Braithewaite et al., 2017; Leo et al., 2021; Nantsupawat et al., 2017; Panagioti et al., 2017; Shanafelt et al., 2017; Sharifi et al., 2021; West et al., 2018; Zhang et al., 2020).

Synthesis

This ILR provided useful information to answer the clinical question related to identifying best-practice interventions to address burnout and promote employee engagement and well-being among HCWs in acute care settings (Aryankesal et al., 2019; Boamah et al., 2018; Braithewaite et al., 2017; Brooks Carthon et al., 2020; Dechant et al., 2019; Duan et al., 2019; Goedhart et al., 2017; Leo et al., 2021; Nantsupawat et al., 2017; Panagioti et al., 2017; Pospos et al., 2018; Shanafelt et al., 2017; Sharifi et al., 2021; Sultana et al., 2020; West et al., 2018; Zhang et al., 2020). Several scholars concluded that organizational-directed workplace interventions and system-level improvements in work environments can reduce burnout, while also increasing patient satisfaction, and improving patient outcomes (Braithewaite et al., 2017; Brooks Carthon et al., 2020; DeChant et al., 2019; Shanafelt & Noseworthy, 2017).

There is strong evidence to support addressing burnout through culture change (Braithewaite et al., 2017; Leo et al., 2021; Nantsupawat et al., 2017; Panagioti et al., 2017; Shanafelt et al., 2017; Sharifi et al., 2021; West et al., 2018; Wu et al., 2021; Zhang et al., 2020). Positive workplace cultures are associated with a wide range of beneficial outcomes for HCWs

(Braithewaite et al., 2017; Leo et al., 2021; Nantsupawat et al., 2017; Wu et al., 2021). Nurses comprise the largest segment of the healthcare workforce and the work environment is related to job dissatisfaction, burnout, and intention to leave among nurses. Therefore, an improvement in this area should be addressed to retain an adequate nursing workforce (Nantsupawat et al., 2017). Cultivating positive workplace cultures which emphasize employee well-being while humanizing and supporting the mental health of HCWs was supported by several articles (Aryankhesal et al., 2018; Leo et al., 2021; Wu et al., 2021). However, culture change to reduce stigma associated with mental illness is needed (Leo et al., 2021).

Leadership has a direct impact on organizational culture and influences workplace climate and employee attitudes (Boamah et al., 2018; Shanafelt & Noseworthy, 2017; Valle et al., 2021; Wu et al., 2021). Researchers indicated that social and relational leadership, specifically transformational and authentic leadership models, can be beneficial in enhancing outcomes, interprofessional collaboration, and increasing social support. Social and relational leadership can mitigate the degree of burnout experienced by hospital staff (Boamah et al., 2018; Regan et al., 2016).

Several articles address the importance of enabling a supportive environment using innovative organizational approaches. Propros et al. (2018) and Sultana et al. (2020) supported leveraging digital technology to deliver mental health services, prevent burnout, and address the mental health needs of HCWs. Digital technologies and applications have been used to reduce the stressors experienced by healthcare providers and diminish depression, suicidality, and burnout (Propros et al., 2018).

Ethical Considerations

This project was submitted to the Liberty University IRB, which exempted it from human subject guidelines because there were no participants. No ethical concerns applied to the ILR (see Appendix F).

SECTION SIX: DISCUSSION

Conclusion

Burnout is a prevalent, complex global public health problem. Burnout negatively affects individual HCWs, patients, healthcare organizations, and society generally. This review considered best practices and interventions to address burnout and promote engagement and well-being among HCWs within acute care hospitals. Burnout among HCWs should be seen as a shared responsibility between individual HCWs and the healthcare setting. Cultural, combined, or bundled strategies are recommended to reduce burnout and increase well-being among HCWs. In order to meet growing public health needs, there is an urgent need for all stakeholders to collaborate to implement strategies and solutions to mitigate burnout and promote positive, professional workplaces, employee engagement, and well-being while evaluating the long-term effects of specific solutions.

Implications for Practice/Future Work

This ILR provided a summary of recent research related to burnout and synthesized applicable literature. Additionally, the review has presented information that can be used for needed policy change related to the promotion of well-being among HCWs and reducing burnout. There are gaps in the literature concerning several areas. More longitudinal studies related to the causes and consequences of burnout are needed. Second, the effect of individual and organizational approaches in combination have not been studied. This includes the need for

assessment following intervention, optimal approaches to applying long-term solutions for burnout. Third, there is a need to better understand the consequences of burnout as they affect patient outcomes and safety, healthcare costs, and clinician practice behaviors such as the impact on career plans and the ability to care for populations.

Dissemination

The review results will be shared in Scholar's Crossing. Findings and information from this review can be used to promote a healthy workplace environment and mitigate burnout. This review provided a basis of information that can be used to empower healthcare leaders, executives, and clinical managers when designing practical strategies to reduce burnout and promote engagement and well-being among HCWs. In the future, this review could be presented for publication or as a podium or conference poster presentation.

References

- American Association of Colleges of Nurses. (2006). *The essentials of doctoral education for advanced nursing practice*. <http://www.aacnnursing.org/DNP/DNP-Essentials>
- American Medical Association [AMA]. (2016). *Medical specialties with the highest burnout rates*. <https://www.ama-assn.org/practice-management/physician-health/medical-specialties-highest-burnout-rates>
- Aryankhesal, A., Mohammadibakhsh, R., Hamidi, Y, Alidoost, S., Behzadifar, M, Sohrabi, R., & Farhadi, Z. (2019). Interventions on reducing burnout in physicians and nurses: A systematic review. *Medical Journal of the Islamic Republic of Iran*, 33. <https://doi.org/10.34171/mjiri.33.77>
- Bergstedt, K., & Wei., H. (2020). Leadership strategies to promote frontline nursing engagement. *Nursing Management*, 51(2), 48–53. <https://doi.org/10.1097/01.NUMA.0000651204.39553.79>
- Boamah, S. A., Laschinger, H. K. S., Wong, C., & Clarke, S. (2018). Effect of transformational leadership on job satisfaction and patient safety outcomes. *Nursing Outlook*, 66, 180–189. <https://doi.org/10.1016/j.outlook.2017.10.004>
- Braithwaite, J., Herkes, J., Ludlow, K., Testa, L., & Lamprell, G. (2017). Association between organizational and workplace cultures, and patient outcomes: Systematic review. *BMJ Open*, 7, e017708. <http://doi.org/10.1136/bmjopen-2017-017708>
- Brooks Carthon, J. M., Hatfield, L., Brom, H., Houton, M., Kelly-Hellyer, E., Schlak, A., & Aiken, L. H. (2021). System-level improvements in work environments lead to lower nurse burnout and higher patient satisfaction. *Journal of Nursing Care Quality*, 36(1), 7–13. <https://doi.org/10.1097/NCQ.0000000000000475>

- DeChant, P. F., Acs, A., Rhee, K. B., Boulanger, T. S., Snowdon, J. L., Tutty, M. A., Sinsky, C. A., & Craig, K. J. T. (2019). Effect of organizational-directed workplace interventions on physician burnout: A systematic review. *Mayo Clinic Proceedings: Innovations, Quality & Outcomes*, 3(40), 384–408. <https://doi.org/10.1016/j.mayocpiqo.2019.07.0006>
- Delbo, K. A. (2018a). *Promotion of professional practice environments in hospitals: A call for action, evidenced-based practice (EBP) proposal part 1*. [Unpublished manuscript]. School of Nursing, Liberty University.
- Delbo, K. A. (2018b). *Promotion of professional practice environments in hospitals: A call for action, evidenced-based practice (EBP) proposal part 2*. [Unpublished manuscript]. School of Nursing, Liberty University.
- Delbo, K. A. (2021). *The effects of system level improvements in work environments among physicians and nurses experiencing burnout*. [Unpublished manuscript]. School of Nursing, Liberty University.
- Duan, X., Ni, X., Shi, L., Zhang, L., Ye, Y., Mu, H., Li, Z., Liu., X., Fan, L., & Wang, Y. (2019). The impact of workplace violence on job satisfaction, job burnout, and turnover intention: The medicating role of social support. *Health and Quality of Life Outcomes*, 17(93), 1–10. <https://doi.org/10.1186/s12955-019-1164-3>
- Freudenberger, H. J. (1974). Staff burn-out. *Journal of Social Issues*, 30(1), 159–165. <https://doi.org/10.1111/j.1540-4560.1974.tb00706.x>
- Gallup. (2017). *State of the American workplace*. <https://www.gallup.com/workplace/238085/state-american-workplace-report-2017.aspx>

- Goedhart, N. S., Van Oostveen, C. J., & Vermeulen, H. (2017). The effect of structural empowerment of nurses on quality outcomes in hospitals: A scoping review. *Journal of Nursing Management*, 25(3), 194–206. <https://doi.org/10.1111/jonm.12455>
- Gray, P., Senabe, S., Naicker, N., Kgalamono, S., Yassi, A., & Spiegel, J. M. (2019). Workplace-based organizational interventions promoting mental health and happiness among healthcare workers: A Realist Review. *International Journal of Environmental Research and Public Health*, 16(22), 4396. <https://doi.org/10.3390/ijerph16224396>
- Leo, C. G., Sabina, S., Tumolo, M. R., Bodini, A., Ponzini, G., Sabato, E., & Mincarone, P. (2021). Burnout among healthcare workers in the COVID-19 era: A review of existing literature. *Frontiers in Public Health*, 9, 1–6. <https://doi.org/10.3389/fpubh.2021.750529>
- Li, H., Shi, Y., Li, Y., Xing, Z., Wang, S., Ying, J., Zhang, M., & Sun, J. (2018). Relationship between nurse psychological empowerment and job satisfaction: A systematic review and meta-analysis. *Journal of Advanced Nursing*, 74(6), 1264–1277. <https://doi.org/10.1111/jan.13549>
- Melnik, B. M., & Fineout-Overholt, E. (2015). *Evidence-based practice in nursing & healthcare* (3rd ed.). Wolters Kluwer.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D.G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med* 6(7), e1000097. <https://doi.org/10.1371/journal.pmed.1000097>
- Nantsupawat, A., Kunaviktikul, W., Nantsupawat, R., Wichaikhum, O. A., Thienthong, H., & Poghosyan, L. (2017). Effects of nurse work environment on job dissatisfaction, burnout, intention to leave. *International Nursing Review*, 64(1), 91–98. <https://doi.org/10.1111/inr.12342>

- National Academy of Medicine [NAM]. (2019). *National Academy of Medicine action collaborative on clinician well-being and resilience*. <https://nam.edu/initiatives/clinician-resilienceand-well-being/>
- Page, M. J., Moher, D., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... McKenzie, J. E. (2021). PRISMA 2020 explanation and elaboration: Updated guidance and exemplars for reporting systematic reviews. *BMJ (Clinical Research ed.)*, 372, n160. <https://doi.org/10.1136/bmj.n160>
- Panagioti, M., Panagopoulou, E., Bower, P., Lewith, G., Kontopantelis, E., Chew-Graham, C., Dawson, S., van Marwijk, H., Geraghty, K., & Esmail, A. (2017). Controlled interventions to reduce burnout in physicians: A systematic review and meta-analysis. *JAMA Internal Medicine*, 177(2), 195–205. <https://doi.org/10.1001/jamainternmed.2016.7674>
- Pospos S., Young, I. T., Downs, N., Iglewicz, A., Depp, C., Chen, J. Y., Newton, I., Lee, K., Light, G. A., & Zisook, S. (2018). Web-based tools and mobile applications to mitigate burnout, depression, and suicidality among healthcare students and professionals: A systematic review. *Academic Psychiatry*, 42(1), 109–120. <https://doi.org/10.1007/s40596-017-0868-0>
- PRISMA. (2020). Prisma 2020 checklist. PRISMA: Transparent reporting of systematic reviews and meta-analyses. <http://prismastatement.org/PRISMAStatement/Checklist>
- Regan, S., Laschinger, H. K. S., & Wong, C. A. (2016). The influence of empowerment, authentic leadership, and professional practice environments on nurses' perceived

- interprofessional collaboration. *Journal of Nursing Management*, 24(1), E54–E61.
<https://doi.org/10.1111/jonm.12288>
- Shanafelt, T. D., Hasan, O., Dyrbye, L. N., Sinsky, C., Satele, D., Sloan, J., & West, C. P. (2015). Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. *Mayo Clinic Proceedings*, 90(12), 1600–1613. <https://doi.org/10.1016/j.mayocp.2015.08.023>
- Shanafelt, T. D., & Noseworthy, J. H. (2017). Executive leadership and physician well being: Nine organizational strategies to promote engagement and reduce burnout. *Mayo Clinic Proceedings*, 92(1), 129–146. <https://doi.org/10.1016/j.mayocp.2016.10.004>
- Sharifi, M., Asadi-Pooya, A. A., & Mousavi-Roknabadi, R. S. (2021). Burnout among healthcare providers of COVID-19: A systematic review of epidemiology and recommendations. *Archives of Academic Emergency Medicine*, 9(1), e7.
<https://doi.org/10.22037/aaem.v9i1.1004>
- Smith, J. G., Morin, K. H., & Lake, E. T. (2017). Association of the nurse work environment with nurse incivility in hospitals. *Journal of Nursing Management*, 26(2), 219–226.
<https://doi.org/10.1111/jonm.12537>
- Sultana, A., Sharma, R., Hossain, M., Bhattacharya, S., & Purohit, N. (2020). Burnout among healthcare providers during COVID-19: Challenges and evidence-based interventions. *Indian Journal of Medical Ethics*, 4, 1–6. <https://doi.org/10.20529/IJME.2020.73>
- Toronto, C. E., & Remington, R. (2020). *A step-by-step guide to conducting an integrative review*. Springer International. http://dx.doi.org/10.1007/978-3-030-37504-1_1

United States Department of Health and Human Services. (2022). *Current priorities of the U. S. Surgeon General: Health worker burnout*. [https://www.hhs.gov/surgeongeneral/](https://www.hhs.gov/surgeongeneral/priorities/health-worker-burnout/index.html)

[priorities/health-worker-burnout/index.html](https://www.hhs.gov/surgeongeneral/priorities/health-worker-burnout/index.html)

Valle, R. B. L. R., Balsanelli, A. P, Taminato, M., Saconato, H., Gasparino, R. (2021). The relationship between the authentic leadership of nurses and structural empowerment: A systematic review. *Revista da Escola de Enfermagem da U S P*, 55, e03667.

<https://doi.org/10.1590/S1980-220X2019029003667>

West, C., Dyrbye, L., Erwin, P. J., & Shanafelt, T. (2016). Interventions to prevent and reduce physician burnout: A systematic review and meta-analysis. *Lancet*, 388(10057), 2272–2281. [http://doi.org/10.1016/S0140-6736\(16\)31279-X](http://doi.org/10.1016/S0140-6736(16)31279-X)

West, C. P., Dyrbye, L., & Shanafelt, T. (2018). Physician burnout: Contributors, consequences and solutions. *Journal of Internal Medicine*, 283(6), 516–529. <https://doi.org10.1111/joim.12752>

Whittemore, R., & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing*, 52(5):546–553. <https://doi.org/10.1111/j.1365-2648.2005.03621.x>

World Health Organization [WHO]. (2019). *Burn-out an “occupational phenomenon:” International Classification of Diseases*. <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>

Wu, A., Roemer, E. C., Kent, K., Ballard, D., & Goetzl, R. Z. (2021). Organizational best practices supporting mental health in the workplace. *Journal of Occupational and Environmental Medicine*, 63(12), e925–e931. [https://doi.org/10.1097/](https://doi.org/10.1097/JOM.0000000000002407)

[JOM.0000000000002407](https://doi.org/10.1097/JOM.0000000000002407)

Zhang, X. J., Song, Y., Jiang, T., Ding, N. & Shi, T. Y. (2020). Interventions to reduce burnout of physicians and nurses. *Medicine*, 99(26), e20992. [https://doi.org/10.1097/](https://doi.org/10.1097/MD.00000000000020992)

[MD.00000000000020992](https://doi.org/10.1097/MD.00000000000020992)

TABLES**Table 1***Inclusion and Exclusion Criteria*

Inclusion	Exclusion
Published from 2017–2022	Published before 2017
Published in English	Published in a foreign language
Peer-reviewed journal articles	Non-peer-reviewed articles
Full-text articles	Abstract only articles
Hospital setting	Outpatient setting

Table 2*Melnyk's Levels of Evidence*

Levels of Evidence	Source of Empirical Evidence
Level I	Evidence from systematic reviews.
Level II	Evidence from randomized control trials.
Level III	Evidence from controlled cohort studies.
Level IV	Evidence from uncontrolled cohort studies.
Level V	Evidence from case studies and case series, qualitative and descriptive studies, Evidence-Based Practice (EBP) implementation and QI projects.
Level VI	Evidence from expert opinions.

Melnyk, B. M., & Fineout-Overholt, E. (2015). *Evidence-based practice in nursing & healthcare* (3rd ed.). Wolters Kluwer.

Table 3*Categorized Interventions to Address Burnout Among Healthcare Workers*

Impact Level	Interventions	References
Individual	Small group programming	Aryankesal et al., 2019; Panagioti et al., 2017; Pospos et al., 2018; Sultana et al., 2020; West et al., 2018; Zhang et al., 2020
	Initiatives for stress management; web-based tools/mobile applications	
	Mindfulness training, Yoga, meditation, relaxation, touch therapy, energy healing	
	Self-care and communication skills training	
	Aromatherapy/Massage	
Structural/Organizational	Teamwork; involve all HCWs in management decisions	Aryankesal et al., 2019; Brooks Carthon et al., 2020; Dechant et al., 2019; Duan et al., 2019; Goedhart et al., 2017; Panagioti et al., 2017; Shanafelt et al., 2017; Sharifi et al., 2021; Sultana et al., 2020; West et al., 2018; Zhang et al., 2020
	Structure multi-disciplinary team to provide psychosocial support for HCWs	
	Leadership training and awareness of burnout	
	Shorten the duration of shifts	
	Improve clinical processes, workload, and workflow	
	Provide practical support for frontline	

Cultural, Blended or
Combinational

Promote a blame-free
environment to share
challenges, ethical and
emergency issues, and
incidents

Aryankesal et al., 2019; Boamah et al., 2018;
Braithewaite et al., 2017; Leo et al., 2021;
Nantsupawat et al., 2017; Panagioti et al., 2017;
Shanafelt et al., 2017; Sharifi et al., 2021; West et
al., 2018; Zhang et al., 2020

Introduce a radical
change in culture which
recognizes humanity

Promote shared
responsibility and
values

Promote a culture
representative of
relational and social
leadership

Prioritize and promote
a healthy work
environment

Appendix A

Level of Evidence

Name: Kimberly Delbo

Clinical Question: What are the best strategies to address burnout and promote engagement and well-being among healthcare workers within the hospital care setting?

Article Title, Author, etc. (Current APA Format)	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Level of Evidence: Use Melnyk Framework	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Aryankhesal, A., Mohammadibakhsh, R., Hamidi, Y., Alidoost, S., Behzadifar, M., Sohrabi, R., & Farhadi, Z. (2019). Interventions on reducing burnout in physicians and nurses: A systematic review. <i>Medical Journal of the Islamic Republic of Iran</i> , 33. https://doi.org/10.34171/mjiri.33.77	To provide a greater understanding of interventions on the reduction of burnout among hospital physicians and nurses.	Initial search revealed 2506 studies, with an additional 5 identified through hand searching the latest journals. After removing duplicate studies, 1965 studies were examined independently by the two researchers for relevance, resulting in 18	Five data bases were searched: PubMed, Web of Sciences, Embase, Scopus, and Cochrane Central) from January 2000 to June 2017. Using the following	Revealed 12 RCTs and 6 pretest/post-test studies which were included in the review. Most studies were from the Netherlands, U.S., and England and were conducted during 2010-2017.	Level 1: Systematic review and analysis of RCTs and pretest post-test studies.	The number of studies which used the same intervention was too small, so generalization of the results should be done with caution. Number of participants in some studies was	Yes, provides high quality and solid information that can be useful when seeking to implement system level improvements in the work environment to decrease burnout among physicians and nurses.

		<p>studies included for final analysis.</p>	<p>string of keywords: Nurses or Physicians AND Burnout or depression or mental health AND Randomized control trial or time series or pretest posttest or before-after study AND hospital.</p> <p>Google Scholar was also used to search for gray literature.</p> <p>Randomized Control Trials (RCTs) and pretest/post-test were included. The process for study</p>	<p>Interventions included team-based program, electronic mental health (EMH) approach, and coping and communication skills training.</p> <p>Most interventions had a positive impact on burnout reduction among physicians (50%) and nurses (67%).</p>		<p>too low leading to a reduction in statistical strength and an increase in inconsistency, thereby reducing the effects of intervention (p. 6)</p>	<p>It includes a thorough review while delineating different strategies, such as training and improving communication skills, spiritual programs based on mediation, yoga, teamwork, staff appreciation, computer programs, and coping strategies.</p> <p>Communication skills training were the most effective intervention to improve burnout among nurses and physicians (p. 7).</p>
--	--	---	--	--	--	---	---

			<p>identification and selection was based on Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA).</p> <p>The titles and abstracts were independently examined by 2 researchers and only interventional studies were included. Excluded studies were non-interventional studies, those not conducted at hospitals, studies</p>				
--	--	--	--	--	--	--	--

			<p>conducted on medical and nursing students, review studies, abstracts of conferences, chapters of books and letters written to the editor. Disagreement between the 2 researchers was resolved by consulting a third researcher (p. 2).</p>				
<p>Boamah, S. A., Laschinger, H. K. S., Wong, C., & Clarke, S. (2018). Effect of transformational leadership on job satisfaction and patient safety outcomes. <i>Nursing Outlook, 66</i>, 180–</p>	<p>To investigate effects of the behaviors of nurse managers transformational leadership on patient safety outcomes and</p>	<p>Random sample of acute care nurses in Ontario, Canada (N=378) responded by completing the cross-sectional survey. (Response rate was 38%).</p>	<p>Random sample of acute care nurses in Ontario completed a cross-sectional predictive survey. Using</p>	<p>Findings suggest that transformational nurse managers improve patient care quality by creating work environments</p>	<p>Level 5: Single qualitative study</p>	<p>Cross-sectional study design limits causality to the study variables and foundational theory associations</p>	<p>Yes; provides some good information regarding the theoretical underpinnings and important role that transformational leaders play in</p>

<p>189. https://doi.org/10.1016/j.outlook.2017.10.004</p>	<p>job satisfaction.</p>	<p>Most nurse were female (94%), and baccalaureate prepared (45%) and worked full-time (68%) in med-surg units (30%) and critical care units (30%).</p> <p>Demographics Mean age: 46 Mean years of nursing experience: 21 Female: 356 Male: 22</p> <p>Employment status: Full-time: 258 Part-time: 90 Casual: 30</p> <p>(Delbo, 2018)</p>	<p>structural equation modeling, a hypothesized model based on transformational leadership theory of Bass (1985) and theory of structural empowerment (Kanter, 1993) was tested (Delbo, 2018).</p>	<p>that enable nurses to feel empowered to provide optimal care.</p> <p>Findings suggest that transformational leadership is paramount for improving patient safety/quality care outcomes and increasing nurses' satisfaction at work (Delbo, 2018).</p>		<p>(Boamah et al., 2018). Potential for response bias related to self-reported measures. Subjective assessment represents only an estimate of adverse events, which might be subject to bias (Delbo, 2018). Only a 38% response rate to the survey, although samples representing nurses (in respect to age, experience, and level of education) (Boamah et al., 2018; Delbo, 2018).</p>	<p>enhancing the quality of work environments for nurses to produce better outcomes for patients and enhance job satisfaction, despite only being a level 6 (Delbo, 2018).</p> <p>This information can be particularly useful when implementing system-level interventions in an effort to reduce burnout among nurses and other members of the interprofessional healthcare team.</p>
--	--------------------------	--	--	--	--	--	--

<p>Braithwaite, J., Herkes, J., Ludlow, K., Testa, L., & Lamprell, G. (2017). Association between organizational and workplace cultures, and patient outcomes: Systematic review. <i>BMJ Open</i>, 7:e017708. https://doi.org/10.1136/bmjopen-2017-017708.</p>	<p>To synthesize evidence on the extent in which organizational and workplace cultures are associated with patient outcomes.</p>	<p>Articles were heterogenous in terms of participants as expected considering the wide-range health contexts included in the review.</p> <p>Search identified 2049 relevant articles; following review of abstracts using inclusion criteria 204 articles were eligible for full-text review with 62 articles included in the final analysis.</p> <p>Majority of the studies were from North America or Europe (84%), conducted in hospital settings (89%), largely quantitative (94%) and cross-sectional (81%).</p>	<p>Review was carried out in accordance with PRISMA.</p> <p>By searching CINAHL, EMBASE, Ovid, MEDLINE, Web of Science, and PsycINFO since the inception of the databases until the time the search was conducted (August 2016).</p> <p>Inclusion criteria included: English language, peer-reviewed journal articles</p>	<p>Findings indicated that overall, positive organizational and workplace cultures were consistently associated with a wide range of patient outcomes, such as reduced mortality rates, hospital acquired infections, falls, and increased patient satisfaction.</p> <p>In over 90% of the studies, organizational and workplace cultures were correlated with patient outcomes.</p>	<p>Level 1: Systematic review</p>	<p>Review revealed no level one evidence, it found a consistent association held between culture and outcomes across studies, settings, and countries.</p> <p>All included articles sustained a risk for bias.</p> <p>Greater than 93% of included studies were observational; observational studies rate as low quality.</p> <p>The term culture was inconsistently defined or</p>	<p>Yes, provides substantial information to enhance knowledge of healthcare organizational and workplace culture. It also provides knowledge in favor of activities that promote positive, healthy cultures when seeking to address healthcare provider burnout and enhance healthcare organizational outcomes.</p>
--	--	--	---	--	-----------------------------------	---	---

		<p>Revealed four interventional studies, and no RCTs, but some good quality social science studies(Braithwaite et al., 2017; Delbo, 2018).</p>	<p>which consisted of empirical research conducted in healthcare settings.</p> <p>Studies were assessed for quality of evidence and risk for bias (Braithwaite et al., 2017; Delbo, 2018).</p>	<p>Positive workplace and organizational culture was significantly associated with: system-related patient outcomes, mortality rates, failure to rescue, adverse events/medication errors, wellbeing outcomes, patient satisfaction, quality of life, patient mood, pressure ulcers, falls, hospital acquired infections, depressive symptoms, pulmonary embolism/ DVT,</p>		<p>measured in the studies reviewed. Heterogeneity of data complicated attempts by the authors to draw conclusions, precise comparisons across studies (Braithwaite et al., 2017; Delbo, 2018).</p>	
--	--	--	--	---	--	---	--

				incontinence, symptom burden at end of life, and mental and physical health status (Delbo, 2018).			
--	--	--	--	---	--	--	--

<p>Brooks Carthon, J. M., Hatfield, L., Brom, H., Houton, M., Kelly-Hellyer, E., Schlak, A., & Aiken, L. H. (2021). System-level improvements in work environments lead to lower nurse burnout and higher patient satisfaction. <i>Journal of Nursing Care Quality</i>, 36(1), 7–13. https://doi.org/10.1097/NCQ.0000000000000475</p>	<p>To evaluate the relationship between nurse burnout and patient satisfaction and make a determination if work environments are associated with these outcomes.</p>	<p>The sample included 463 hospitals in 4 states (California, Florida, New Jersey, and Pennsylvania). 26% response rate to survey was noted. 14,772 nurses with an average of 31.9 nurse respondents per hospital. Revealed 705 potentially relevant papers. Final analysis resulted in 21 papers and three grey documents. Most of the studies (29%) analyzed by the authors utilized non-experimental and cross-sectional designs. The authors found</p>	<p>Cross sectional analysis was used to in the 4 states using 3 linked data sets from 2016: Patient satisfaction ratings were obtained from HCAHPS survey, the American Hospital Association Annual Survey (provided information on hospital structure characteristic), and the RN4CAST-US (a survey of hospital nurses) were used to collect data.</p>	<p>Study revealed that 50% of hospitals where nurse burnout is high had poor work environments which is strongly related to lower levels of patient satisfaction (p. 11-12). Found that across the 463 hospitals, 1 in 3 nurses experiences high burnout and that was negatively and significantly associated with patient satisfaction.</p>	<p>Level 5: single qualitative study</p>	<p>Cross-sectional study design limits the interpretation of causality to the study variables. Also, since the study sample included hospitals in 4 states raising questions on generalizability (p. 6). However, the authors note that these are “populous states and represent more than 20% of all hospital admissions” (p. 6). The authors further note that this could</p>	<p>Yes, provides good information regarding the association between high nurse burnout, lower patient satisfaction, and work environments. It provides information to support system level improvements in the nurse work environment to improve both nurse and patient outcomes. Health care systems are beginning to make system level improvements to reduce burnout, but most work to date has focused on</p>
--	--	--	---	--	--	---	---

		seven topic related reviews, four of which were systematic reviews, two were literature reviews, and one was a scoping review. The papers had proposed experimental designs using RCTs.	University of Pittsburgh IRB approval was secured.			increase confidence regarding the applicability across a wide range of settings.	physicians. This article is helpful in demonstrating the need to employ system level improvements and achieve better work environments.
DeChant, P. F., Acs, A., Rhee, K.B., Boulanger, T., S., Snowdon, J. L., Tutty, M. A., Sinsky, C. A., Craig, K., J. ,T. (2019). Effect of organizational - directed workplace interventions on physician burnout: A systematic review. <i>Mayo Clinic Proceedings: Innovations, Quality & Outcomes</i> , 3(40), 384–408. https://doi.org/10.1	To assess the impact of organizational directed workplace interventions on burnout, stress, and job satisfaction of physicians (DeChant et al., 2019).	Initial search revealed 633 citations, and 50 met the criteria (DeChant et al., 2019).	Medline, Embase, and Cochrane Library databases were searched for relevant articles from January 1, 2007, to October 3, 2018. Using the following search terms: physician, burnout,	Of the 50 articles which met the criteria for inclusion, four categories of organization-directed workplace interventions were identified. Of the 50 included studies, 35 reported successful interventions aimed at 3	Level 1: Systematic review	Number of participants in some studies was very low leading to a reduction in statistical strength and an increase in inconsistency. Generalization of the results should be made with caution.	Yes, provides high quality of information that supports that organization directed workplace interventions the reduce clinical burden by the implementation of team-based care, improved processes, optimization of EHRs, and by the use of

<p>016/j.mayocpiqo.2019.07.0006</p>			<p>stress, workflow, time and motion studies psychologic-al factors, work behaviors, work engagement, health outcomes, job satisfaction job performance, job-person fit, quadruple aim, and organiza-tional factors.</p> <p>Manual search of grey literature was also performed looking at key conferences, organization web sites,</p>	<p>measures of burnout, job satisfaction, and/or stress.</p> <p>Most interventions were centered on processes, promoted team-based care, and the incorporation of scribes/medi cal assistants for the purpose of EHR documenta-tion completion and improved clinical workflows and tasks (DeChant et al., 2019).</p>		<p>scribes can lessen physician burnout. It is further noted that the benefits of such process changes can augment care, enhance resiliency, and optimize communica-tion and coordination of patient care and health information (DeChant et al., 2019).</p>
---	--	--	---	--	--	--

			<p>and biographies (DeChant et al., 2019).</p> <p>The titles and abstracts were independently examined by 2 reviewers, with discrepancies resolved by a third reviewer (DeChant et al., 2019).</p>				
<p>Duan, X., Ni, X., Shi, L., Zhang, L., Ye, Y., Mu, H., Li, Z., Liu, X., Fan, L., & Wang, Y. (2019). The impact of workplace violence on job satisfaction, job burnout, and turnover intention: the mediating role of social support.</p>	<p>Three purposes: to identify the prevalence of workplace violence (WPV) against physicians, examine the association between</p>	<p>Nine tertiary public hospitals were survey sites. 18,450 physicians in 9 hospitals; a total of 1486 samples were extracted. On average 225 physicians from each hospital were extracted.</p>	<p>A cross-sectional which utilized purposive sampling to collect data from March 2017 through May 2017</p>	<p>Results indicate a high prevalence of WPV in Chinese hospitals. WPV positively correlated with turnover intention ($r=$</p>	<p>Level 5: Single cross-sectional study</p>	<p>Purposive sampling results are greatly influenced by the researcher's perceptions. These may be biased, which can result in</p>	<p>Yes, although the quality of the article is not of high rigor, the study has significance for hospital leaders and management and policy making.</p>

<p><i>Health and Quality of Life Outcomes</i>, 17(93), 1–10. https://doi.org/10.1186/s12955-019-1164-3</p>	<p>exposure to WPV, burnout, job satisfaction, and turnover intention among Chinese physicians, and verify the role of social support in mediation (Duan et al., 2019).</p>	<p>Of the 1486 questionnaires sent 1257 were recovered effective response rate was 84.59%) (Duan et al., 2019). 74.9% were married 25.1% were single, divorced, or widowed 53.6% male 46.4% female 27.4 % <30 years 64.7% 31-50 years 7.9% > 51years Data is aggregated by department and specialty, years of experience and number of daily working hours</p>	<p>(Duan et al., 2019). Descriptive analysis, a univariate analysis, a Pearson correlation, and medication regression analysis were used to estimate WPV prevalence and the impact of WPV on job burnout, turnover intention, and job dis-Satisfaction (Duan et al., 2019).</p>	<p>.238, p, .01), job burnout (r=.150, p<.01). A negative association was noted with job satisfaction (r=- .228, p, .01) and social support (r= -.077, p,.01). Social support was found to be a partial mediator between WPV and job satisfaction, burnout, and turnover intention (Duan et al., 2019).</p>		<p>sampling bias. This can thwart confidence in the results and the overall investigation . Recall bias can also be evident in the participants responses. Cross-sectional study design limits causality to the study variables comparisons across studies over time (Duan et al., 2019).</p>	<p>The article shows that the effects of social support on workplace violence and that it has practical implications for interventions to promote team stability (Duan et al., 2019, p. 9).</p>
<p>Goedhart, N. S., Van Oostveen, C.</p>	<p>To synthesize and assess</p>	<p>Search revealed 672 potentially</p>	<p>Review was carried out</p>	<p>Review revealed that</p>	<p>Level 1: Systematic</p>	<p>High heterogene-</p>	<p>Yes, provides strong</p>

<p>J., & Vermeulen, H. (2017). The effect of structural empowerment of nurses on quality outcomes in hospitals: A scoping review. <i>Journal of Nursing Management</i>, 25(3), 194–206. https://doi.org/10.1111/jonm.12455</p>	<p>literature reporting associations between structural empowerment of frontline nurses and quality outcomes and identify gaps in current literature (Goedhart et al., 2017)</p>	<p>relevant articles after duplicates removed.</p> <p>Twelve studies published between 1996 and 2014 that met the inclusion criteria remained.</p> <p>All the studies had a non-experimental cross-sectional design. Sample sizes of the studies ranged from 40-537 nurses, and from 50-1606 patients.</p> <p>Included studies were carried out in North America, Canada, and the U.S. (Delbo, 2018)</p>	<p>in accordance with Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA).</p> <p>By searching MEDLINE, CINAHL, Business Source Premier, and Embase, including articles from inception to December 2015.</p> <p>Studies were assessed for quality of evidence (Delbo, 2018).</p>	<p>structural empowerment positively influences patient care on all dimensions of quality of care: quality, effectiveness, efficiency, safety (number of medication errors, VAP, CAUTI), and patient-centeredness (Goedhart et al., 2017, p. 203; Delbo, 2018).</p>	<p>review & meta-analysis of RCTs, clinical guidelines based on systematic reviews or meta-analyses</p>	<p>ity in the outcome measurement of quality of care</p> <p>Limited to studies examining a direct relationship between SE and quality outcomes; therefore, excluding valuable studies reporting on indirect associations that may contribute to the relationship between empowerment and quality outcomes (Delbo, 2018).</p>	<p>evidence to support a practice change when seeking to promote empowering work conditions for nurses that create positive professional practice environments, and interprofessional collaborative projects to address healthcare provider burnout (p. 203; Delbo, 2018).</p>
---	--	--	---	---	---	--	--

<p>Leo, C.G., Sabina, S., Tumolo, M. R., Bodini, A., Ponzini, G., Sabato, E., & Mincarone, P. (2021). Burnout among healthcare workers in the COVID 19 era: A review of existing literature. <i>Frontiers of Public Health</i>, 9, 1–6. https://doi.org/10.3389/fpubh.2021.750529</p>	<p>Aim of review is to discuss burnout among HCWs in the COVID-19 era while analyzing emerging concepts and identify the health professionals exposed to greatest risk, the effects of burn-out on an individual and organization level, recommendations to address this issue.</p>	<p>Review of literature was done without date restrictions</p> <p>Inclusion of studies was assessed through visual inspection of abstracts.</p>	<p>Review of literature was conducted on MEDLINE/ Pubmed, ISI Web of Knowledge, Scopus, and Google Scholar.</p> <p>Search was limited to works published in English or Italian and used the following search terms: “healthcare workers,” “physicians,” “residents,” “nurses,” “burnout,” “chronic pain,” “pain syndrome,” “painful disorders,”</p>	<p>Review revealed several measures to prevent or reduce burnout among healthcare workers and calls for action at the individual, organizational or cultural level.</p> <p>The key recommendation is to take address challenges in health, well-being and behavioral science through long term research to guide the necessary cultural change and improve public health systems.</p>	<p>Level 1: Systematic review</p>	<p>The review does not clearly include the number of articles identified although provides a narrative analysis of the studies as classified by subcategories.</p>	<p>Yes, provides strong evidence to support addressing burnout through culture change. Article notes that culture change to reduce stigma associated with mental illness is needed, despite some progress being made to remove barrier to psychological support to cope with work-related stress.</p> <p>Article highlighted the current research gaps to ensure health systems can be</p>
--	---	---	---	---	-----------------------------------	--	--

			<p>“stress,” “workloads, ” “suicide,” “Covid19,” “coronaviru s disease,” “pandemic”.</p>				<p>prepared for future challenges.</p>
<p>Nantsupawat, A., Kunaviktikul, W., Nantsupawat, R., Wichaikhum, O. A., Thienthong, H., & Poghosyan, L. (2017). Effects of nurse work environment on job dissatisfaction, burnout, intention to leave. <i>International Nursing Review</i>, 64(1), 91–98. https://doi.org/10.1111/inr.12342</p>	<p>To explore how work environment affects job dissatisfac- tion, intention to leave, and burnout among nurses in Thailand.</p>	<p>Stratified sample was used to randomly select hospitals across the county. Purposive sampling was used to select hospital units.</p> <p>1,351 nurses working in 43 inpatient units in five university hospitals located in Thailand.</p> <p>Participants were those with at least 2 years of experience of inpatient bedside nursing.</p> <p>97% of participants were female, with bachelor’s degrees (87%)</p>	<p>A non- experiment- al, descriptive survey.</p> <p>Participants completed the Practice Environ- ment Scale of the Nursing Work Index, the Maslach Burnout Inventory, and measures of job dissatisfac- tion and intention to leave</p> <p>(Delbo, 2018; Nantsupawa</p>	<p>Results Revealed that one in six nurses (17%) reported being dissatisfied with their job, and one in ten (10%) expressed an intent to leave within a year. 51% had high burnout.</p> <p>16 of the units were categorized as good and 7 were considered poor.</p> <p>Results indicate that nurses with a better work</p>	<p>Level 5: Single qualitative study</p>	<p>Self-reports to measure nurse work environment or outcomes. Participants may have not reported accurately.</p> <p>Limited generaliz- ability to settings similar to the study.</p>	<p>Yes, provides some good foundational information despite being a level 6.</p> <p>Study found that a poor work environment is the underlying factor for nurse turnover and attrition. It suggests that improvement of nurse work environments should be addressed by policy to retain nursing in the workforce.</p> <p>The authors note that further research is</p>

		<p>with an average age of 34 years old. Mean work experience was 11 years and had been in their current unit for approximately 10 years</p> <p>(Delbo, 2018; Nantsupawat et al., 2017)</p>	t et al., 2017)	<p>environment reported dissatisfaction, emotional exhaustion, and intention to leave at a 39-55% lower rate than those working in a poor work environment (Nantsupawat et al., 2017, p. 95).</p>			<p>needed to investigate guidelines, tools, and interventions used by managers in the nursing field to create healthy environments (Delbo, 2018; Nantsupawat et al., 2017, p. 97). This could be helpful when seeking to reduce burnout among nurses, physicians, and other healthcare providers.</p>
<p>Panagioti, M., Panagopoulou, E., Bower, P., Lewith, G., Kontopantelis, E., Chew-Graham, C., Dawson, S., van Marwijk, H., Geraghty, K., & Esmail, A. (2017). Controlled interventions to</p>	<p>To evaluate the effectiveness of interventions to reduce burnout in physicians. Also, to determine whether</p>	<p>Study selection included randomized clinical trials and controlled before-after studies of interventions that targeted burnout in physicians.</p>	<p>Reporting of the review adheres to Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA).</p>	<p>Analyses o subgroup suggests significantly improved effects for organization-directed interventions compared with</p>	<p>Level 1: Systematic review and meta-analysis</p>	<p>Two of the greatest limitations or threats to the validity of the meta-analysis are the heterogeneity and publication</p>	<p>Yes, this information can be very helpful and helpful of practice change. The findings of this high level of evidence study support</p>

<p>reduce burnout in physicians: A systematic review and meta-analysis. <i>JAMA Internal Medicine</i>, 177(2), 195–205. https://doi.org/10.1001/jamainternmed.2016.7674</p>	<p>different types of interventions (physician directed or organization directed interventions), physician characteristics , such as length of experience, and health care setting characteristics were associated with improved effects.</p>	<p>Two independent reviews extracted and assessed the data for risk of bias. 20 independent comparisons from 19 studies were included in the meta-analysis. n= 1550 physicians, mean age 40.3 years, 49% male.</p>	<p>Five electronic databases were searched from inception until May 31, 2016. These included: MEDLINE, Embase, CINAHL, Cochrane Register of Controlled Trials, and PsycINFO (p. 197). The search included combination of 3 key blocks of terms: (burnout, physicians, interventions) using MESH terms (p. 197).</p>	<p>physician-directed. Interventions delivered in experienced physicians care were associated with higher effects in comparison to those inexperienced and practicing in secondary care; however, these differences were not significant.</p>		<p>bias, however there was a large number of identified and already meta-analyzed controlled comparisons (20). Also, the size of the study allowed for the assessment of publication bias with adequate power (p. 202)</p>	<p>the view that burnout is a problem of the entire healthcare organization, rather than individuals. Evidence also suggests that recent intervention programs for burnout among physicians were associated with small benefits that can benefit from the adoption of organization-directed approaches. Organization-directed interventions are more likely to lead to reductions in burnout and those that combined</p>
---	---	--	--	---	--	---	--

						<p>several approaches such as structural changes, cultivating teamwork and fostering communication among members of the healthcare team, and job control tend to be the most effective in reducing burnout.</p> <p>This information is specifically useful when using interprofessional collaboration to tackle the pervasive problem of healthcare provider burnout.</p>
--	--	--	--	--	--	---

<p>Pospos S., Young, I.T., Downs, N., Iglewicz, A., Depp, C., Chen, J.Y., Newton, I., Lee, K., Light, G.A., Zisook, S. (2018). Web-based tools and mobile applications to mitigate burnout, depression, and suicidality among healthcare students and professionals: a systematic review. <i>Academic Psychiatry</i>, 42(1), 109–120. https://doi.org/10.1007/s40596-017-0868-0</p>	<p>To review published data regarding the demand of training and practice which can lead to chronic distress and serious psychological, personal health demands, and interpersonal burdens. This article reviewed published data regarding how web-based and mobile apps have been shown to mitigate burnout, stress, depression, and suicide ideation (Pospos et al., 2018).</p>	<p>Identified 36 resources to further evaluate; based on applicability and relevance to healthcare providers, and the strength of the findings to support effectiveness (Pospos et al., 2018).</p>	<p>Searched PubMed for articles evaluating burnout, depression, stress and suicide prevention or interventions for healthcare providers (Pospos et al., 2018).</p> <p>Searched Google and wellness resources website beacon.anu.edu.au for online tools to prevent burnout, depression, and suicide (Pospos et al., 2018).</p> <p>Mobile apps aimed at healthcare professional</p>	<p>Selected 7 web-based and digital resources designed to foster wellness and reduce burnout, depression, and suicide risk among healthcare workers under 5 general categories for programs which include web-based Cognitive Behavioral Therapy (MoodGYM, StressGym), meditation (Headspace, guided meditation videos), mindfulness, breathing (Breath2Relax), and</p>	<p>Level 1: Systematic Review</p>	<p>Study limitations included heterogeneity and publication bias and small sample sizes of the studies involving the identified resources included (Pospos et al., 2018).</p>	<p>Yes, this SR serves as a starting point to enhance coping with the stressors experienced by healthcare providers or students and when specifically seeking to mitigate depression, suicidality, and burnout. It also provides recommendations for adapting digital health strategies to meet the needs of healthcare providers and provides some good information (Pospos et al., 2018).</p>
---	---	--	--	---	-----------------------------------	---	---

			were queried using Google Play Store, Apple App store, and the US Dept. of Veteran Affairs App store. Revealed no healthcare worker specific wellness resources (Pospos et al., 2018).	relaxation techniques. Suicide prevention apps include (Stay Alive, Virtual Hope Box) (Pospos et al., 2018).			
Shanafelt, T. D. & Noseworthy, J. H. (2017). Executive leadership and physician well being: Nine organizational strategies to promote engagement and reduce burnout. <i>Mayo Clinic Proceedings</i> , 92(1), 129–146.	Delineates nine organization strategies to promote physician engagement and reduce burnout: Acknowledge and assess the problem, harness the power of	Not applicable	Not applicable	This article provides helpful information in addressing the problem of physician burnout while noting it is a shared responsibility if individuals and the organizations	Level 6 Expert opinion	Due to the low level of evidence, indicated by expert opinion, this article is not a very strong resource.	Yes, it does provide useful information regarding the Seven drivers of burnout and engagement as it relates to the individual, work unit, organizational, and national factors.

<p>https://doi.org/10.1016/j.mayocp.2016.10.004</p>	<p>leadership develop and implement targeted interventions, cultivate community at work, use rewards and incentivize wisely, align values, and strengthen culture, promote flexibility and work-life integration, provide resources to promote resilience and self-care, and facilitate and fund organizational science.</p>			<p>in which they work (p. 142). It provides a strong business case for organizations to reduce physician burnout and promote employee engagement given the strong links to quality care, as well as patient safety and satisfaction.</p> <p>It delineates nine organizational strategies to reduce provider burnout and examples of how the strategies were operationalized at Mayo Clinic.</p>		<p>It also provides an easy-to-follow blueprint that delineates a step wise process for targeted work unit interventions (p. 137).</p> <p>Shanafelt is an established expert in the topic of physician burnout having served as a contributing author and member on various National Academies of Medicine [NAM] Committees, including the Committee on Systems Approaches to Improve Patient Care by Supporting</p>
--	--	--	--	---	--	--

							Clinician Well Being and a contributor for the consensus study report “Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being (NAM, 2019).
Sharifi, M., Asadi-Pooya, A., A., & Mousavi-Roknabadi, R., S. (2021). Burnout among healthcare providers of COVID-19: a systematic review of epidemiology and recommendations. <i>Archives of Academic Emergency Medicine</i> , 9(1), e7. https://doi.org/10.22037/aaem.v9i1.1004	To evaluate and review literature investigating the epidemiology of burnout and the strategies and recommendations to prevent or reduce it among healthcare professionals of COVID-19 and to better enable policy	12 studies were included, and five studies investigated risk factors associated with burnout. None of the studies examined any interventions to prevent or reduce burnout of healthcare providers working in the frontline. papers and three grey documents	Searched Medline (accessed through PubMed), Science Direct, and Scopus electronic databases in English from Dec. 1, 2019 to August 15, 2020. Using MESH terms and following related key	11/12 studies had cross-sectional design; one study provided a conceptual paradigm that showed the relationship between acute stress disorder, PTSD, and burnout. Five studies investigate	Level I: Systematic review	This SR included all studies with cross-sectional study design limiting the interpretation of causality to the study variables. None of the studies follow-up with participants and all	Yes, the results of this study show that healthcare managers and policy makers can and should take measures to prevent and reduce burnout in five key areas: paying attention to mental health issues, reducing the workload of HCPs through adjusting

	makers to make appropriate decisions (Sharifi et al., 2021).	(Sharifi et al., 2021).	words: COVID-19 OR COVID19 OR Corona OR Coronavirus OR SARS-CoV-2. AND burnout AND Medical staff OR Healthcare Personnel Research-gate and Google scholar were also used to access articles in English to ensure literature saturation (Sharifi et al., 2021).	risk factors associated with burnout (Sharifi et al., 2021).		assessments were revealed self-reporting and declaration. Heterogeneity in respect to the participants and applied tools (Sharifi et al., 2021).	shifts, reducing work related stressors, and creating a healthy work environment (Sharifi et al., 2021).
Sultana, A., Sharma, R., Hossain, M., Bhattacharya, S., & Purohit, N. (2020). Burnout among	The purpose of the article was to draw attention to the occupational	Not applicable	Not applicable	This article includes an overview of psychosocial and moral distress	Level 6 Expert opinion	Due to the low level of evidence, indicated by expert opinion, this	Yes, it does provide a small amount of information which is supportive of

<p>healthcare providers during COVID-19: Challenges and evidence-based interventions. <i>Indian Journal of Medical Ethics</i>, 4,1–6. https://doi.org/10.20529/IJME.2020.73</p>	<p>problem of healthcare provider burnout, especially during the COVID-19 pandemic.</p>			<p>experienced by providers while promoting the use of global evidence that indicates the need for the adoption of multipronged evidence-based approaches to address burnout during this pandemic. This includes increasing awareness as it relates to work related stress and burnout, the promotion of self-care and mindfulness, optimal mental health services, improvement of organizational policies and practices</p>		<p>article is not a very strong resource.</p>	<p>creating an enabling environment through the use of innovative organizational approaches despite being a level 6.</p> <p>It references several high level studies and meta-analyses.</p> <p>It notes that it is essential to improve organizational measures in order to create a lasting impact of work place cultures, alongside individual interventions, and ultimately address occupational stress.</p>
---	---	--	--	--	--	---	---

				<p>which focus on burnout, and leveraging digital technologies to deliver mental health intervention, prevent burnout, and address mental health services.</p>		<p>Some suggested strategies include improvement workflow management, enhancing interoperability, improving communication skills, organizing workshops for coping skills, providing for adequate rest and exercise for healthcare providers, fostering a culture of shared decision-making and a supportive, enabling environment, devising policies, procedures, and practices for reducing burnout among healthcare</p>
--	--	--	--	--	--	---

							providers during this pandemic.
<p>West, C., Dyrbye, L., Erwin, P. J., & Shanafelt, T. (2016). Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. <i>Lancet</i>, 388(10057), 2272–2281. http://doi.org/10.1016/S0140-6736(16)31279-X</p>	<p>To enhance understanding of the best evidence for effective interventions to prevention and reduce burnout among physicians and establish a strong foundation for further research while addressing gaps in literature (West et al., 2016).</p>	<p>Identified 2617 articles of which 15 randomized trials which included 716 physicians and 37 cohort studies including 2914 physicians met the studies inclusion criteria (West et al., 2016).</p>	<p>Searched MEDLINE, Embase, PsychINFO, Scopus, Web of Science, and the Education Resources Information Center (ERIC) from inception to Jan. 15, 2016.</p> <p>Studies including which included pre-post comparison measures were included. Used random effects models to calculate</p>	<p>17 of the studies involved structural interventions, including practice delivery changes, and 20 involved individual focused interventions, which consist of non-facilitated small group curricula, communication skills training, stress management and self-care training, and mindfulness based approaches (West et al., 2016).</p>	<p>Level 1: Systematic review & meta-analysis</p>	<p>Few studies assessed long term post-intervention effects. The data for participant demographics was sporadically reported in the studies.</p> <p>Many of the cohort studies included demonstrate substantial risk for bias, due to the inability to control for confounding factors (West et al., 2016).</p>	<p>Yes, provides strong evidence to support both individual-focused, and structural or organizational strategies which can result in meaningful reductions of burnout among physicians. Further research is needed to establish which interventions are most effective in specific populations and how solutions might be combined to deliver even greater</p>

			<p>pooled mean difference estimates for outcomes (West et al., 2016).</p>	<p>Follow-up analyses was completed in 5 of the RCT studies ranging from 19 weeks to nearly 4 years later. Among the cohort studies follow-up studies were done in four studies between 1 month to 2 years after the intervention conclusion. Overall burnout decreased from 54% to 44%, emotional exhaustion score decreased from 2.82 points to 21.17 points and depersonaliz</p>		<p>improvement (West et al., 2016).</p>
--	--	--	---	---	--	---

				<p>ation score decreased 9.05 to 8.41. High emotional exhaustion decreased from 38% to 24% and high depersonalization decreased from 38% to 34% (West et al., 2016).</p>			
<p>West, C. P., Dyrbye, L., & Shanafelt, T. (2018). Physician burnout: contributors, consequences and solutions. <i>Journal of Internal Medicine</i>, 283(6), 516–529. https://doi.org/10.1111/joim.12752</p>	<p>To outline the contributors, consequences, and solutions for physician burnout which align with drivers.</p>	<p>Not applicable</p>	<p>Not applicable</p>	<p>This article includes an overview of the contributors, consequence and effective solutions of physician burnout as they align with the drivers of burnout which are largely rooted in</p>	<p>Level 6 Expert opinion</p>	<p>Due to the low level of evidence, indicated by expert opinion, this article is not a very strong resource although it summarizes a high level of evidence with selected key publications.</p>	<p>Yes, this article provides information which is supportive of addressing burnout among physicians as a shared responsibility of both healthcare systems and individual providers</p>

				<p>healthcare systems and organizations (West et al., 2018). The delineated drivers include excessive work environments, clerical burdens, inefficient work processes, work-home conflicts, organizational support structures, lack of input or control, and leadership culture (West et al., 2018).</p>		<p>despite being a level 6.</p> <p>It references several high level studies such as some systematic reviews and meta-analyses.</p> <p>It delineates solutions organizational and individual level solutions to mitigate burnout. It also identifies existing gaps in the literature as it relates to several common broad themes. More longitudinal studies related to the causes and consequences of burnout are needed. Secondly, the effect of individual and</p>
--	--	--	--	--	--	--

							organizational approaches in combination have not been studied. This includes the need to assess post-intervention optimal approaches to the implementation of burnout longitudinally. Thirdly, there is an identified need in the literature to better understand the consequences of burnout as it relates to patient outcomes and safety. healthcare costs, clinician practice behaviors., such as the impact on career plans (West et al., 2018).
--	--	--	--	--	--	--	---

							Particular mention is given to organizational support structures and leadership culture (West et al., 2018).
Zhang, X. J., Song, Y., Jiang, T., Ding, N. & Shi, T. Y. (2020). Interventions to reduce burnout of physicians and nurses. <i>Medicine</i> , 99(26), e20992. https://doi.org/10.1097/MD.00000000000020992	To summarize and critically review the evidence and clarify a bundled strategy to reduce burnout of physicians and nurses.	Initial search yielded 841 potential articles, after removing duplications n=334. A total of 22 studies published from 2014 to 2019 were eligible for analysis. n=9 studies that examined burnout among physicians, n=6 burnout among nurses, and n=7 burnout among healthcare providers.	Overview for the systematic reviews and meta-analyses was performed following Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA). By searching for studies using Cochrane Library, PubMed,	The Maslach Burnout Inventory (MBI) was used by the majority of the studies when assessing burnout. Studies valuated a wide-range of interventions, including individual focused (self-care workshop, yoga, mindfulness, meditation, emotion regulation,	Level 1: Systematic literature review and meta-analyses	Considering gray literature was not included and partial databases selected, the results are used only as an overview (p. 12).	Yes, provides strong evidence to support a practice change. The overview of literature clarified evidence to reduce burnout among physicians and nurses. This can be helpful for clinical managers, health policy makers when designing feasible strategies to reduce healthcare provider

		<p>No language restriction was noted.</p>	<p>Ovid, Scopus, EBSCO, and CINAHL databases from inception to December 2019. Additionally, a manual search for articles was conducted using Google Scholar.</p> <p>Three key blocks of terms were used in combination : burnout; physicians and nurses; interventions).</p> <p>The Risk of Bias in Systematic Reviews and the Assessment</p>	<p>communication skills and stress management skills training), Structural or organizational interventions included teamwork/transitions, workload or schedule rotations, group face-to-face delivery, Balint training, focus group, debriefing) and combine interventions (stress management and resiliency training, Snoezelen, stress management workshop and improving</p>			<p>burnout and promote clinical safety.</p> <p>Supports the use of bundled strategy when addressing the complicated problem of burnout.</p>
--	--	---	---	--	--	--	---

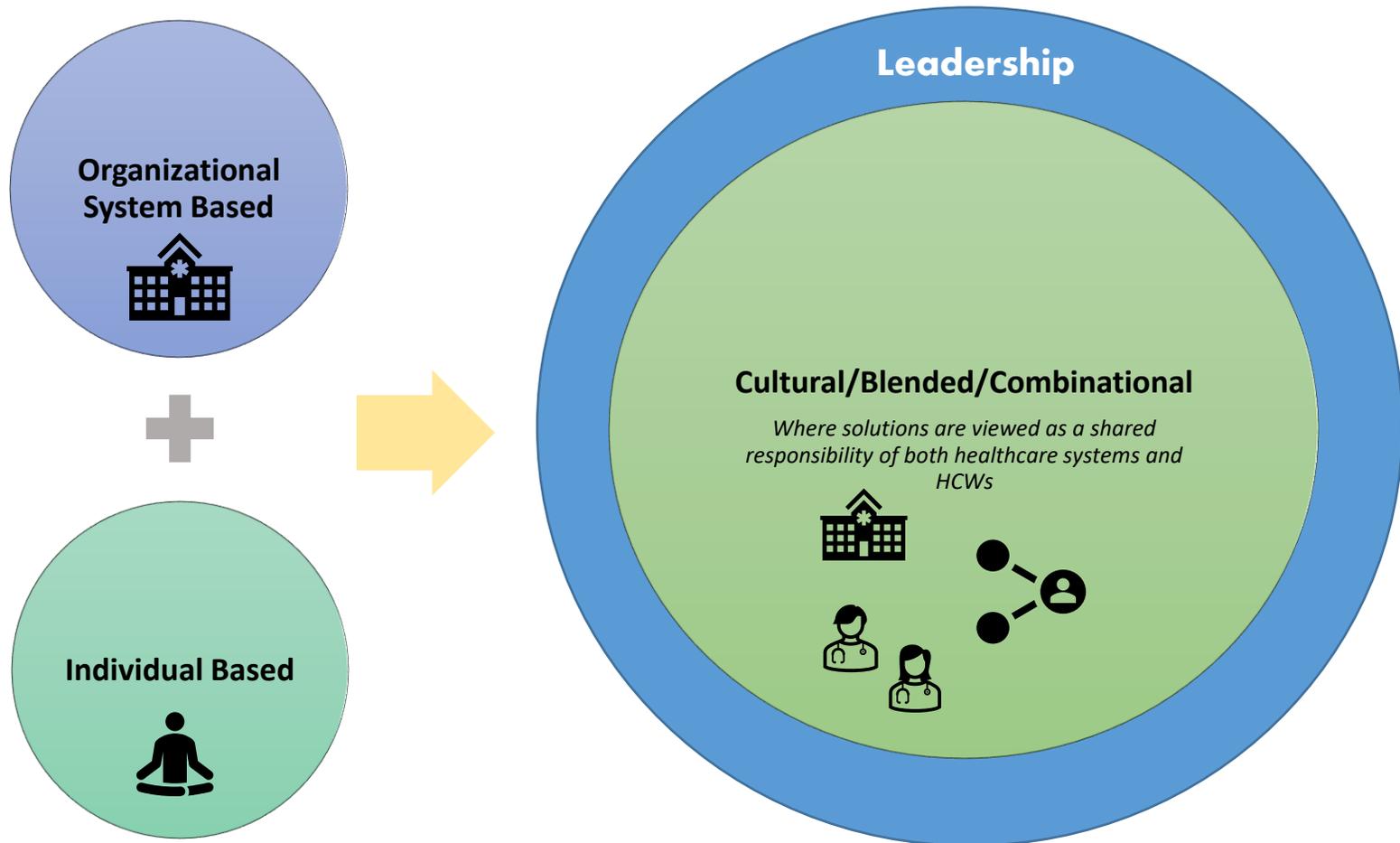
			of Multiple SRs (AMSTAR) 2 tool were used to evaluate risk for bias and article quality.	interactions with colleagues training.			
--	--	--	--	--	--	--	--

*Melnyk’s Level of Evidence Pyramid is required for appraising the level of evidence.

Appendix B

Illustration of Key Interventional Categories in Evidence

Key Interventional Categories to Address Burnout



Appendix C

PRISMA 2020 Checklist Reference



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	
Effect	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	

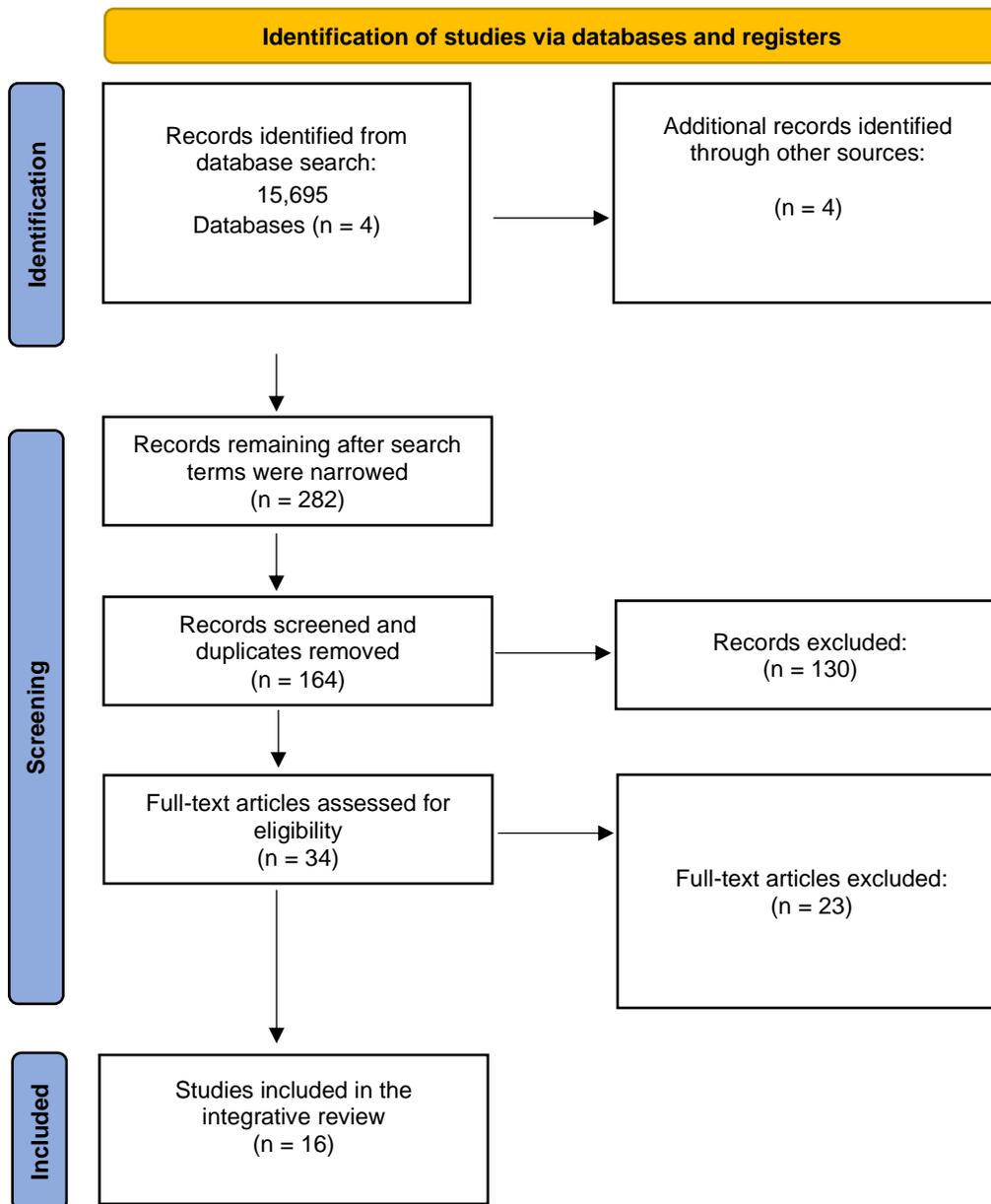
Section and Topic	Item #	Checklist item	Location where item is reported
measures			
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	

Section and Topic	Item #	Checklist item	Location where item is reported
evidence			
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	
	23b	Discuss any limitations of the evidence included in the review.	
	23c	Discuss any limitations of the review processes used.	
	23d	Discuss implications of the results for practice, policy, and future research.	
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing interests	26	Declare any competing interests of review authors.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., McGuinness, L. A., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ (Clinical Research ed.)*, 372, n71. <https://doi.org/10.1136/bmj.n71>

Appendix D

PRISMA 2020 Flow Diagram Systematic Review



Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., McGuinness, L. A., ... Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ (Clinical Research ed.)*, 372, n71. <https://doi.org/10.1136/bmj.n71>

Appendix E

CITI Training Certificate



Completion Date 24-May-2021
Expiration Date 23-May-2024
Record ID 42599577

This is to certify that:

Kimberly Delbo

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Social & Behavioral Research - Basic/Refresher

(Curriculum Group)

Social & Behavioral Researchers

(Course Learner Group)

1 - Basic Course

(Stage)

Under requirements set by:

Liberty University



Verify at www.citiprogram.org/verify/?wc93ed8b7-cd60-4679-9027-5f40dd2696ad-42599577

Appendix F**Liberty University IRB Approval****LIBERTY UNIVERSITY.**
INSTITUTIONAL REVIEW BOARD

July 25, 2022

Kimberly Delbo
Dorothy Murphy

Re: IRB Application - IRB-FY22-23-59 BEST STRATEGIES TO ADDRESS BURNOUT AMONG HEATHCARE PROFESSIONALS: AN INTEGRATIVE REVIEW

Dear Kimberly Delbo and Dorothy Murphy,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your project with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research for the following reason:

It will not involve the collection of identifiable, private information from or about living individuals (45 CFR 46.102).

Please note that this decision only applies to your current application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

Also, although you are welcome to use our recruitment and consent templates, you are not required to do so. **If you choose to use our documents, please replace the word *research* with the word *project* throughout both documents.**

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Research Ethics Office