Compassion Fatigue Interventions: A Systematic Review

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Abstract

Compassion fatigue is a potential consequence of providing care to others. Compassion fatigue affects the mental health of employees from a variety of professional categories, including those working in the criminal justice system. The purpose of this study was to assess the current evidence in order to guide evidence-based practice and direct future research on the topic. A systematic review of studies published between 2000-2016 was completed and six studies on compassion fatigue were included in the review. Interventions for compassion fatigue were educational programming and music therapy. Although educational programming interventions showed promise of reducing symptoms of compassion fatigue, their true efficacy is unclear since none of those studies used randomized controls. Music therapy was found not to be an evidence-based intervention. Compassion fatigue symptoms mirror those of posttraumatic stress disorder (PTSD). A further review of the literature on PTSD interventions resulted in the inclusion of nine research syntheses from that domain. Evidence-based interventions for PTSD included: mindfulness-based stress reduction, cognitive-behavioural therapy, eye movement desensitization and reprocessing, physical activity, acupuncture, medications, group treatment, collaborative care, mantra-based therapy, emotional freedom technique, and exposure therapy. After a detailed discussion of the interventions, the paper concludes with implications for practice, study limitations, and future directions for research in this field.

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Introduction

The mental health of employees is imperative to the growth and health of an organization. The intent of this paper is to shed light on compassion fatigue, a growing mental health concern among professionals who work with traumatized people. This paper will look at the current evidence-based prevention or treatment measures for compassion fatigue.

The Canadian Mental Health Commission (CMHC) (2013) reported that each week in Canada, 500,000 employees were projected to be absent from the workplace due to mental health related issues. CMHC estimated the Canadian economy loses approximately $51 billion annually in mental health associated costs. Organizations are increasingly concerned about occupational stresses in the workplace and are looking at developing policies and practices to reduce those workplace stresses and increase workplace mental health. Organizations are acknowledging their role in mental health promotion for their workers and are looking for prevention and treatment interventions that can effectively reduce turnover rates, reduce sick leave, and improve overall service delivery (White, 2006).

With an increased focus on mental health in organizations, it is necessary to examine the risks to employees and foster support from all levels of management. Organizational leaders need to understand the risks to their employees and ensure that evidence-based prevention and treatment intervention programs are available. They need to ensure managers understand the risks to their employees and are committed to working towards a healthy work environment. Also, they need to ensure that employees have the resources, education, and tools to stay healthy in the workplace.

There is general stress associated with every job. In addition, there are compounded stressors that apply to people working in particular roles and occupations. The Criminal Justice System in Canada is made up of a complex group of government organizations who work with persons who have committed a criminal offence or are victims of crime. Workers in this system include police officers, correctional officers, probation officers, crown and defense attorneys, victim service workers, judges, and other court personnel. These employees are at risk of compassion fatigue due to the nature of their roles. For example, they are exposed to secondary traumatic events, may be physically threatened, or have the safety of their loved ones threatened. The emotional, cognitive, and physical consequences of providing professional services in this sector can have a debilitating effect on employees with consequent increases in sick leave, high rates of turnover, and the creation of toxic workplaces (Carlson & Thomas, 2006; Chamberlain & Miller, 2008; Hatcher, Bride, Oh, King, & Catrett, 2011). There has been a significant amount of literature studying the traumatized (Killian, 2008); however, the study of those who work directly with those who have been traumatized is relatively new.

This report provides a general introduction on mental health in the workplace, examines how mental health and work in the field of corrections are connected, and reviews the current literature on compassion fatigue in the workplace and related constructs. The introduction includes preliminary discussion of interventions used to deal with compassion fatigue in the workplace and ends with a summary and statement of the research purpose and questions addressed herein. The method section details the procedures used to conduct the systematic review. The results of the systematic analysis

are outlined, followed by a discussion of the practical implications of the findings, the

study limitations, and a discussion of the opportunities for future research.

Connecting Specific Workplace Stressors with Mental Health

The field of police psychology has grown in the last century providing insight into

mental health issues facing this specialized occupational group. However, in the field of

corrections (community and custody), there is no corresponding field of correctional

psychology to address the growing psychological needs of this specialty group (Brower,

2013). There has been related research completed in other sectors. Shoji et al. (2015)

examined job burnout across different professional categories including social workers,

child protection workers, military health providers, and trauma therapists. Shoji et al.

(2015) examined job burnout in relation to secondary traumatic stress and found that

although job burnout may increase the risk of developing secondary traumatic stress, the

symptoms of secondary traumatic stress are different from burnout.

Some attempts have been made to examine workplace stressors in the criminal

justice system. Hatcher et al. (2011) found that juvenile justice workers were at risk to

develop compassion fatigue because they must routinely interact with juvenile offenders

as a core function of their jobs. Hatcher et al. surveyed workers attending a conference on

self-care using the Secondary Traumatic Stress Scale (STSS). The results revealed a

prevalence of compassion fatigue among respondents. The Hatcher et al. study was based

on a small, convenience sample and was limited to one measurement tool. Those are

important limitations; therefore, replication with others working in the criminal justice

system is required to provide further evidence of prevalence. Severson and Pettus-Davis

(2013) discussed the limited amount of research completed on the experiences of

probation and parole officers working in the criminal justice system. Although these professionals were not clinicians in the therapeutic sense, they did listen to details of trauma events and the victimization of their clients. Severson and Pettus-Davis completed a study on 49 probation officers who worked with sex offenders. These officers answered a questionnaire about their experiences. The study was small and exploratory in nature, but that qualitative study showed the presence of secondary traumatic stress and compassion fatigue amongst this professional group.

In Community and Correctional Services, there has been substantial research conducted on the concept of burnout and the negative impacts burnout can have on employees, managers, and organizations as a whole (Carlson & Thomas, 2006; Gayman & Bradley, 2013; Lambert, Kelley, & Hogan, 2013). In corrections, employees are exposed to trauma events directly and indirectly through the day-to-day requirements of their employment. Understanding and providing evidence-based treatment and prevention programs to workplace-induced stressors is key to employee well-being and organizational success.

To better understand the factors of compassion fatigue, it is necessary to understand how this construct relates to other similar terms. The terms burnout, vicarious trauma, compassion fatigue, and secondary traumatic stress all relate to the emotional and cognitive experiences of exposure directly or indirectly with traumatic events (Salston & Figley, 2003; Severson & Pettus-Davis, 2013). Researchers have emphasized the conceptual overlap among the concepts of burnout, compassion fatigue, vicarious trauma, and secondary traumatic stress, yet each carries its own theoretical assumptions (Chamberlain & Miller, 2008) and is a distinct construct. While the specific definitions

remain ambiguous, researchers agree that helping professionals who work with trauma victims may be negatively affected and can exhibit symptoms similar to those of Posttraumatic Stress Disorder (PTSD) (Bride, Radley, & Figley, 2007; Figley, 1995).

What is Burnout?

The concept of burnout was established by Freudenberger (1974) and elaborated upon by Maslach (1982). Maslach described burnout as feelings of emotional exhaustion, depersonalization, and reduced personal accomplishment. McCann and Pearlman (1990) defined burnout as the psychological strain of working with difficult populations. They described the symptoms as depression, cynicism, boredom, loss of compassion, and discouragement. Burnout has been described as the process of physical and emotional stress caused by work-related factors over a period of time (Chamberlain & Miller, 2008; Collins & Long, 2003). Flarity, Gentry, and Mesnikoff (2013) described burnout as the work-related effects associated with environmental factors (e.g., workplace violence, overcrowding, unrealistic scheduling, workload, and decisions by management). Thompson, Amatea, and Thompson (2014) further differentiated between the terms of burnout and compassion fatigue. Their study concluded that work conditions were more highly correlated with burnout than compassion fatigue and burnout was more highly related to systemic stressors in the work environment. They noted that burnout is a process over time; whereas compassion fatigue can be acute and can happen at any time. There has been a significant amount of literature and research conducted on the subject of burnout in the criminal justice system. Although burnout may be a good predictor or a precursor to compassion fatigue, it is a different construct.

What is Vicarious Trauma?

McCann and Pearlman (1990) introduced the concept of vicarious trauma and provided a theoretical framework for understanding the complexities of trauma work which results in negative changes with respect to thinking about one's environment. By providing care to those who have been traumatized, workers are exposed to traumatic materials thus changing their worldview, belief system, and cognitions (Salston & Figley, 2003). Vicarious trauma and compassion fatigue are two perspectives of secondary trauma using different theoretical assumptions. Vicarious trauma is described as the transformation of the view of one's world due to cumulative exposure to traumatic images and stories that is accompanied by intrusive thoughts and imagery (Chamberlain & Miller, 2008; Mathieu, 2012). Hensel, Ruiz, Finney, and Dewa (2015) indicated vicarious trauma is correlated with a transformation of the helpers' inner experience and a shift in their cognitive schemas about themselves, others, and the world. Vicarious trauma occurs in workers as a result of being empathetic and engaged in clients' trauma experiences causing workers to feel unsafe, lose connections with work, lose interest in others, and have increased negative thoughts (Sansbury, Graves, & Scott, 2015). Vicarious trauma is different from compassion fatigue. Both are caused by normal exposure to the traumatized; however, vicarious trauma cumulates over time, and compassion fatigue can happen at any time.

What is Compassion Fatigue?

Figley (1995) referred to the gradual lessening of compassion among trauma workers as "the cost of caring" (p. 103) and labeled the construct secondary traumatic stress. Figley (1995) defined compassion fatigue as the emotions and behaviours

resulting from knowing about a traumatizing event experienced by another and the stress

resulting from helping or wanting to help a traumatized person. Figley (1995) was the

first to focus on the professional experience of secondary traumatic stress and described

compassion fatigue as the worst consequence of secondary traumatic stress reactions.

Secondary traumatic stress was later changed to compassion fatigue as an attempt to

reduce the stigma against traumatic stress responses amongst professionals (Figley,

1995). Flarity, Gentry, and Mesnikoff (2013) described compassion fatigue as the

combined effects of secondary traumatic stress and burnout. Secondary traumatic stress is

described as the negative effects associated with the witnessing of clients' trauma, pain,

suffering, and stories. Compassion fatigue has been described as observable physical and

emotional reactions to working with the traumatized. The symptoms of compassion

fatigue mirror the symptoms of PTSD (Figley, 2012).

Compassion fatigue, secondary traumatic stress, vicarious trauma, and burnout are

terms used interchangeably by researchers in the field of trauma making it necessary to

examine research using these terms and differentiating among the constructs. These terms

were not used prior to 1995. Research in this domain began in the field of nursing and

medicine and later expanded into the fields of therapeutic counselling, social work, and

helping professionals who were treating traumatized people. As the knowledge and the

effects of compassion fatigue expanded, the occupations to which the research applied

also grew.

Interventions

The number of interventions designed to prevent or decrease the symptoms of

vicarious trauma and compassion fatigue has grown in the past ten years as the need for

treating the traumatized has expanded to treating those who work with the traumatized. There are many occupations that work with the traumatized including social workers, mental health counsellors, lawyers, doctors, nurses, emergency response teams, and criminal justice workers. Each profession has developed approaches to address the occupational stresses that range from individual strategies to organizational strategies. Some of the interventions mentioned in the literature include self-care; Cognitive Behavioural Therapy (CBT); Crises Intervention Stress Debriefing; the Accelerated Recovery Program; and the development of organizational policies around providing supervision, workshops, and creating a supportive organizational culture (Bober & Regehr, 2005; Bourassa & Clements, 2012). Self-care has been identified as a prevention technique throughout the discussion on compassion fatigue. However, research by Bober and Regeher (2006) found no association between self-care and the reduction of secondary traumatic stress symptoms. Killian (2008) reported there have been very few studies that evaluated the effectiveness of self-care on the reduction of stress. There is a need for more than self-care to be available to employees and organizations.

Based on preliminary searches, it seemed difficult to find relevant evaluations of interventions, particularly in the corrections domain. To date, there has been no systematic review or meta-analysis conducted to look at the evidence of the effects of interventions on workers in the criminal justice system. The only similar and recent systematic review (Bercier & Maynard, 2015) focused on interventions for mental health workers. Studies had to have examined interventions for compassion fatigue, vicarious trauma, or secondary traumatic stress for mental health workers defined as social workers, psychologists, counsellors, or therapists. The studies had to be in English and

conducted between 1983 and 2012. Bercier and Maynard's systemic review was an "empty" review in that there were no studies that met their inclusion criteria.

Motivation for the Present Study

Working in the field of Corrections for the past 18 years, both in a custody setting and in the community, I have seen first-hand the debilitating effects of working with the traumatized. In the past five years, the turnover rate has increased and the incidents of sick leave and Workers Compensation Board claims for mental illness have increased. It is difficult to determine the exact numbers as privacy legislation restricts the reporting of the exact reasons why employees are out of the workplace.

As with any department in governments across Canada, financial restraints are a reality. Increased workloads, decreasing staff numbers, and a growing expectation for organizations to provide and ensure healthy workplaces for employees have created challenges. Organizations are working with decreasing budgets while still trying to deliver effective services and attend to workplace mental health initiatives. It is important for governments to ensure they are spending taxpayer monies on evidence-based interventions likely to provide favourable results and returns on their investment. Organizations need to see evidence of a decrease in the incidence of compassion fatigue, resulting in healthier employees, managers, and workplaces.

With a decrease in funding and resources, and a "do-more-with-less" philosophy, ensuring monies are spent on evidence-based interventions is important for organizations. Government organizations are focusing on employee mental health by taking a closer look at the protection of the health of their employees.

Research Purpose and Questions

This systematic review sought to investigate the following research questions. What is the current status of evidence-based interventions for the prevention and treatment of compassion fatigue among community and correctional services workers? To what extent are the interventions effective? What gaps in knowledge exist?

Method

This study identified and analyzed studies on preventative or treatment interventions for both compassion fatigue and PTSD published between 2000 and 2016. The systematic review included the development and implementation of a series of searches accompanied by several rounds of article screening.

Research Approach and Design

Overview and Inclusion Criteria

In order to address the research questions summarized previously, a series of searches were conducted to identify studies that dealt with adult sufferers of compassion fatigue who work in community and correctional services. To be included in the systematic review, a study had to investigate a treatment, intervention, or prevention program. The systematic review was limited to studies published in English, but research from any country was considered. Publication dates were limited to the period 2000-2016 to access the most up-to-date information available. Only articles published in peer-reviewed journals were included. To ensure all possible intervention studies were included, neither journal quality nor study quality were used to exclude studies from the systematic review, though studies were subject to critical appraisal as part of the systematic review process. The search and inclusion criteria were expanded to other

occupational categories after finding no studies related to criminal justice that met the inclusion criteria.

Due to the limited number of intervention studies identified through the original and expanded search strategies described above, the search for studies that could inform organizational practice was further expanded to studies of the treatment of PTSD. There were no occupational limits for this search. As discussed in the introduction, the symptoms of compassion fatigue are similar to those experienced by sufferers of PTSD. Changes in the recent DSM-V included secondary trauma as an inclusion in the treatment of PTSD (Hensel, Ruiz, Finney, & Dewa, 2015). The volume of literature on PTSD is large, so this third phase of the search process was limited to recent meta-analyses or systematic reviews published between 2010 and 2016. This narrow date range was used to provide the most recent research syntheses available on interventions for PTSD among workers. Those meta-analyses and systematic reviews could include primary studies from a larger range of years.

Search Strategy for Identification of Studies

For the initial review, peer-reviewed publications between 2000-2016 were searched via multiple databases. The primary search engines used were Business Source Complete, PsycINFO, Academic Search Complete, Science Direct, Google Scholar, Medline, and SocINDEX. The reference sections of relevant articles were hand searched, providing additional pertinent studies.

The initial search included three categories: compassion fatigue, justice system, and interventions. Within these categories several related terms were used with OR as the connector. The COMPASSION FATIGUE category included: "secondary trauma",

"vicarious trauma", "burnout", "secondary traumatic stress", and "compassion fatigue".

The category JUSTICE SYSTEM included: "community corrections", "corrections",

"correctional officer", "justice system", "probation officer", and "parole officer". The

category INTERVENTION included: "intervention", "treatment", "strategy",

"prevention", and "programs". The Boolean operator AND was used to identify articles

that included at least one search term in all three categories. The abstracts and full-text of

the articles were assessed to determine if they met the inclusion criteria for the present

review. This comprehensive search strategy only identified one result and it did not meet

the inclusion criteria. It was a discussion paper on compassion fatigue in judges and it

was a call for research on compassion fatigue in the criminal justice system. A systemic

review completed by Bercier and Maynard (2015) which aimed to explore the

interventions for secondary traumatic stress in mental health workers found no relevant

studies. Expanding the search parameters to include other professional occupations

resulted in six studies that met the intervention/ prevention criteria (discussed below).

Although there has been intervention research into burnout in the field of

corrections and the criminal justice system, there was no relevant research found specific

to compassion fatigue. The search for intervention research on compassion fatigue was

expanded to include other professional occupations including nursing and medicine,

mental health counselling, and social workers. This resulted in 342 studies (see Figure 1)

and six studies were determined to meet these expanded inclusion criteria.

Due to the limited amount of data found in first two searches, a third search was

executed in the related domain of PTSD where intervention research is more volumous.

As depicted in Figure 2, this third search included the following three categories: post-

traumatic stress disorder, interventions, and systematic review or meta-analysis. Within these categories, several related terms were used with OR as the connector. The POST-TRAUMATIC STRESS DISORDER category included: "Secondary Traumatic Stress Disorder (STSD)", and "Posttraumatic Stress Disorder (PTSD)". The category INTERVENTION included: "intervention", "treatment", "prevention", and "strategy". The last category, RESEARCH SYNTHESIS, was searched with "systematic review" or "meta-analysis". This search resulted in 71 articles and nine were determined to meet the inclusion criteria.
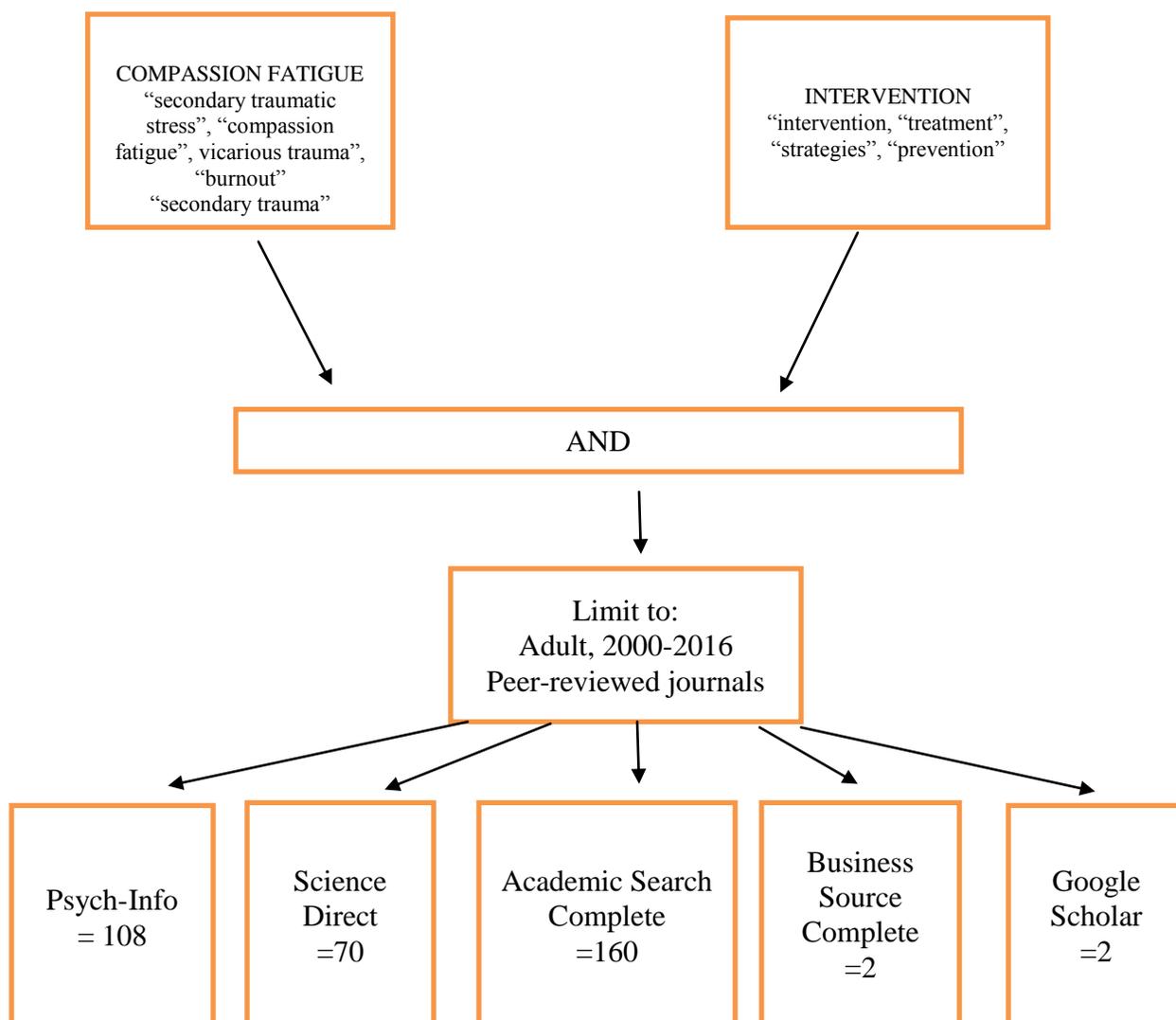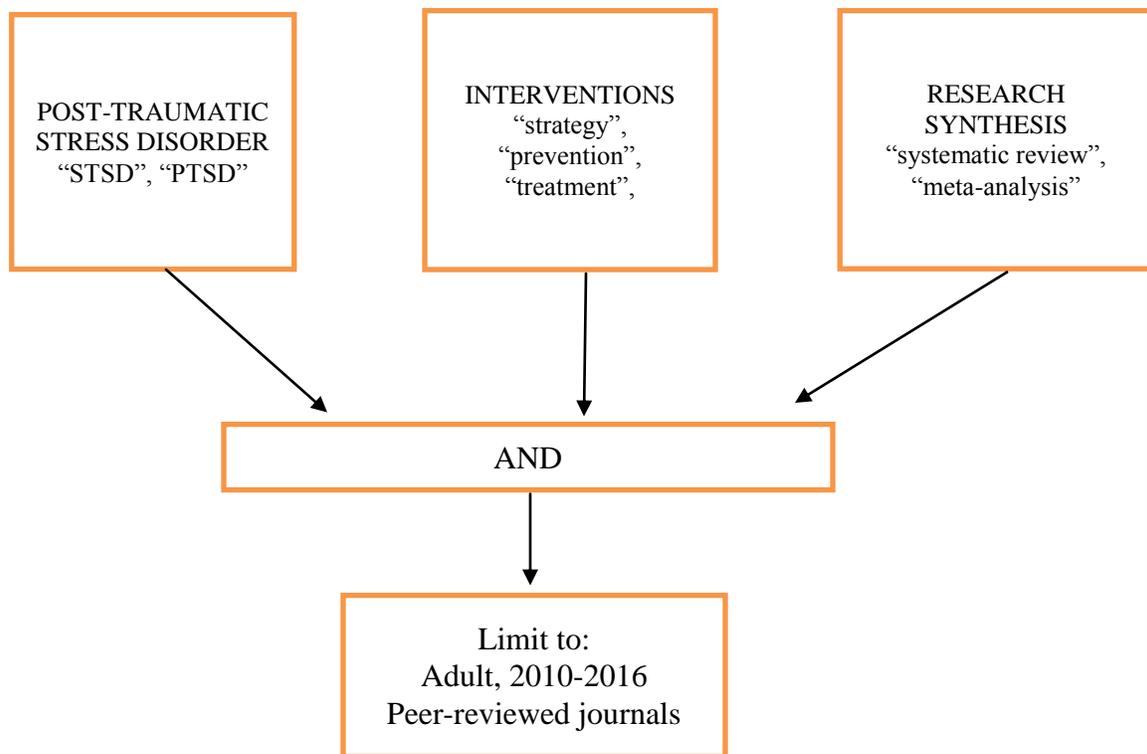
Figure 1: Search Strategy #2

Figure 2. Search Strategy #3

| POST-TRAUMATIC STRESS DISORDER "STSD", "PTSD" | INTERVENTIONS "strategy", "prevention", "treatment", | RESEARCH SYNTHESIS "systematic review", "meta-analysis" |

AND

Limit to:
Adult, 2010-2016
Peer-reviewed journals

Results

The systematic review yielded six articles reporting some intervention or prevention program for compassion fatigue (Table 1). Nine systematic reviews or meta-analyses were found for PTSD interventions covering a variety of treatment options (Table 2). The studies on compassion fatigue all took place in the United States. The studies for PTSD came from various countries including Scotland, South Africa, and Germany with almost half coming from the United States and several from Australia.

The six compassion fatigue articles are displayed in Table 1 and the nine PTSD articles are displayed in Table 2 with key areas such as the purpose of the study,

participant characteristics, intervention description, outcome measures, and significant results highlighted.

The research for the compassion fatigue studies all used a pretest/posttest design and a variety of self-report measures. There was no consistency on the type of measurement tool used. Only one of the six studies used a control group and only one study used random sampling to select participants, but then allowed participants to self-select into the treatment or control group (i.e., no random assignment). Of the nine studies completed for PTSD, all but one completed a statistical analysis of the evidence to determine the efficacy of the treatment or prevention intervention. All studies for both compassion fatigue and PTSD had adult samples. PTSD studies included only those who had been diagnosed with PTSD. In the compassion fatigue studies participants were in the fields of nursing, hospice care, and mental health counseling. They were in their mid-thirties; with a range of experience (1 - 17 years) and the majority of participants were female (in two studies, they were all female).

Interventions

Since 1995, there has been significant research conducted on the subject of compassion fatigue and its impact on the mental health of workers in a variety of occupational settings. The majority of this research has been conducted in the areas of nursing, mental health, and counseling and there is limited research on this topic as it relates to the criminal justice system. It would be reasonable to assume that the research conducted in other occupational groups should apply to helping professionals generally, including criminal justice system employees. As an organization, employee wellness is key to sustaining low turnover rates, loss of employees to sick leave, and creating healthy

workplaces. Understanding compassion fatigue is important not only for managers at various levels, but also for employees themselves. The research suggests that the phenomenon exists; however, it seems more difficult to find research on prevention and treatment interventions for compassion fatigue.

Compassion Fatigue Interventions

Five of the six studies for compassion fatigue were educational prevention programs and one was a treatment program. The interventions ranged from a one-time, four-hour session to one-hour sessions spread over six weeks. The nine PTSD studies covered various treatment options including psychological, pharmacological, mindfulness-based interventions, alternative therapies, telehealth therapies, internet-based therapies, group therapy, and physical activity as an intervention.

Gentry, Baranowsky, and Dunning (2002) created the Accelerated Recovery Program (ARP) which was one of the first programs developed in an effort to address the lack of interventions for compassion fatigue in caregivers. The ARP was developed as a treatment protocol at Florida State University's Psychosocial Stress Laboratory. The program was designed to assist with the symptoms experienced by professionals providing care and experiencing primary traumatic stress, secondary traumatic stress, and cumulative stress. The results showed improvement in functioning and a lessening of compassion fatigue symptoms; however, there was no further testing on the validity of the test results and no research replication of the program. With a small sample size and only one self-test provided, there is weak evidence of its effectiveness as an evidence-based intervention for compassion fatigue.

In response to the results of the Gentry et al. (2002) program, Certified Compassion Fatigue Specialist Training (CCFST) was developed by Gentry, Baggerly, and Baranowsky (2004) to teach skilled implementation of the ARP. Two programs were designed, a 17-hour program with seven participants taught over two days and a 20-hour training session taught over three days to 76 participants. The results showed no difference between the 17-hour and the 20-hour programs. The results of the two programs were combined and Gentry et al. reported a reduction in compassion fatigue symptoms for participants. The study was a pretest/posttest design, based on self-reporting. The 83 participants were recruited by marketing and advertising through The International Traumatology Institute. There was no control group and there was no random assignment to training conditions. All the participants were female; however, it should be noted that only the demographics of the seven participants from the 17-hour program were obtained. The company doing the research was a for-profit professional training organization. It did not require random sampling or assignment procedures and thus, the results cannot be generalized to other occupations. At the time of the writing, 2004, this study was the only research offering empirical data for effective treatment of compassion fatigue.

Hilliard (2006) completed a study on the effects of music therapy on reducing compassion fatigue and team building in hospice workers. The treatment was focused on hospice care workers and the participants had volunteered for the program. The program offered either ecological or didactic music therapy over six weekly, one-hour sessions. Participants were asked to complete a pretest/posttest using the Compassion Satisfaction/ Compassion Fatigue Self-Test (CSFST) and there was no randomization. The results

showed no difference between the two different types of music therapy offered and neither had any effect on compassion fatigue. Team building showed a significant effect.

Meadors and Lamson (2008) designed an educational seminar in response to a lack of research into the effects education has on the reduction of compassion fatigue symptoms to providers who work with children on the Intensive Care Unit. The program consisted of a four-hour education session offered once to nurses at a children's hospital and focused on the specific concerns related to compassion fatigue, stress management, and grief. There was no control group and participants volunteered to participate in the program. Participants were asked to complete a pretest/posttest using the Modified Social Readjustment Scale (SRRS) and the Index of Clinical Stress (ICS). Participants showed improvement in their awareness of compassion fatigue and were better able to identify strategies to handle the different stressors in their life. The results demonstrated those who are experiencing a high level of stress also show higher levels of compassion fatigue. Strategies such as humor and self-care did not significantly reduce compassion fatigue.

Potter et al. (2013) designed an educational program to teach resiliency to oncology nurses in an effort to reduce compassion fatigue. This was a small study with only 13 participants who self-selected to participate. There was no control group. Participants attended a weekly, 90-minute session for five weeks at a National Cancer Institute. Participants received useful strategies for managing stress both at work and at home. The program was modeled after the Gentry et al. (2002) program. Strategies provided through the program focused on the five key elements identified by Gentry et al. for the prevention and treatment of compassion fatigue: self-regulation, intentionality,

perceptual maturation/self-validated care giving, connection, and self-care. The study

was a pretest/posttest design and participants completed the Maslach Burnout Inventory-

Human Services Survey (MBI), the Impact Event Scale (IES), and the ProQOL IV which

is a revised version of the Compassion Fatigue Self-Test (CFST). Participants were asked

to complete the surveys immediately after the program, again at three months post-

program, and again at six-months. The evidence showed that the program reduced

symptoms of compassion fatigue immediately after the program, at the three month

follow-up, and again at the six-month time period. Nurses were better able to recognize

traumatic events and self-regulate related stress and reduce the intrusive stressful

experiences.

Flarity, Gentry, and Mesnikoff (2013) developed an educational program for

emergency nurses as a way to prevent and treat compassion fatigue. This study was a

quantitative study consisting of a four-hour group seminar providing education based on

the concepts identified by Gentry et al. (2002). A video was shown displaying a person

talking about compassion fatigue and how compassion fatigue had impacted his or her

life. The video was followed by information provided on the origin of compassion

fatigue, its symptoms, physiological effects, and work-specific factors that can contribute

to compassion fatigue. Strategies were provided which focused on the five key elements

identified by Gentry et al. for the prevention and treatment of compassion fatigue: self-

regulation, intentionality, perceptual maturation/self-validated caregiving, connection,

and self-care. There were both individual and group activities offered and resources were

provided to participants at the end of the session. The study was a pretest/posttest design

and participants were asked to complete the ProQOL V (updated version of the ProQOL

IV). Results showed participants felt reduced symptoms of compassion fatigue immediately afterward and nurses developed self-help strategies to prevent future compassion fatigue.

Merriman (2013) developed a prevention-based training program for Licensed Professional Counselor Interns consisting of a four-hour seminar offered once to participants. This study did have a control group and random sampling was used to select the sample; however, participants self-selected into the treatment or control group (i.e., no random assignment to conditions). The four-hour seminar offered education on compassion fatigue, compassion satisfaction, self-awareness, self-efficacy, and self-care. The study was a pretest/posttest design in which participants self-reported on the ProQOL V, the Five Factor Mindfulness Questionnaire (FFMQ), the Interpersonal Reactivity Index (IRI), and the Counselor Activity Self-Efficacy Scales (CASES). There was no significant difference shown between the treatment and control groups regarding compassion fatigue, compassion satisfaction, or burnout. The posttests did show a significant difference in empathy and self-awareness at the end of the treatment.

All five of the studies created an educational program designed to reduce compassion fatigue symptoms. All five of the educational studies were based on the original program designed by Gentry et al. (2002) and none presented any new concepts in addition to the original educational program.

PTSD Interventions

Sloan, Gallagher, Feinstein, Lee, and Pruneau (2011) completed a meta-analysis on telehealth interventions for PTSD-related symptoms using 13 studies that had looked at video conferencing, telephone, and internet-based interventions. Limitation of this

review included the use of self-report studies, variability in the treatment protocols and telehealth modality, and the majority of the studies only examined outcomes immediately after treatment. Results did show a reduction of symptoms for PTSD for all the telehealth interventions; however, the authors cautioned that this was a new area in need of further research.

Isper and Stein (2012) completed a meta-analysis of the effectiveness of medication to reduce the symptoms of PTSD. There were 37 studies examined in the analyses. The studies included both placebo-controlled and randomized-controlled trials. There are a variety of medications prescribed in the treatment of PTSD such as Monoamine Oxidase Inhibitors (MAIOs), Reversible Inhibitors of Monoamine Oxidase A (RIMAs) and Selective Serotonin Reuptake Inhibitors (SSRIs). These were included in the study. The results showed the efficacy of medications for treating PTSD over the short term and the efficacy of SSRIs and venlafaxine in the treatment of PTSD. Benzodiazepines were found to have no effectiveness despite their popularity and continued use by clinicians in the treatment of PTSD.

Sloan, Gallagher, Feinstein, Keane, and Beck (2013) completed a meta-analysis of the efficacy of group therapy in treating PTSD and used 16 studies in their analysis. Studies with mostly random controlled trials and any type of group interventions were included. The results showed group treatment was better than no treatment, but may be less efficacious for repeated traumatization or chronic PTSD.

Forneris et al. (2013) completed a meta-analysis of the effectiveness of interventions to prevent PTSD. There were 19 studies included in the analysis. Studies looked at psychological interventions including Battlemind, Cognitive Behavioural

Therapy (CBT), CBT plus hypnosis, crises debriefing, prolonged exposure therapy, self-help materials, and supportive counselling. Pharmacological interventions, collaborative care, and psychological with pharmacology were also included in the studies. Findings indicated CBT was more effective than supportive counselling in reducing PTSD symptoms and collaborative care was better than the usual care. Crises debriefing was found not to be an effective intervention.

Banks, Newman, and Saleem (2015) completed a meta-analysis on mindfulness-based interventions for PTSD. Of the 12 studies included in the analysis, four used randomized controlled trials, one used non-randomized controlled trials, three were uncontrolled trials, and four were pilot studies. The overall findings showed mindfulness-based intervention was effective in reducing the symptoms of PTSD.

Kreuster, Niemeyer, and Knaevelsrud (2015) completed a meta-analysis of Internet-based interventions. There were 20 studies used in this analysis and only studies with randomized control trials were used. Various Internet-based interventions such as Interapy, expressive writing, and internet-based CBT were evaluated. There was support for the internet-based CBT; however, since this area of prevention is relatively new and still being developed the authors called for further research.

Rosenbaum et al. (2015) completed a meta-analysis on the impact of physical activity and exercise on reducing symptoms of PTSD. Only four studies with randomized control trials were found. Two studies looked at yoga, one explored aerobic and strength training, and another examined solely aerobic activity. The results showed that compared to the control groups, physical activity significantly reduced the symptoms of PTSD.

Metcalf et al. (2016) completed a meta-analysis on complementary and alternative therapies for PTSD. There were 15 emerging strategies investigated including: Acceptance and Commitment Therapy (ACT), acupuncture, art therapy, canine therapy, emotional freedom technique, equine therapy, mantra-based meditation, mindfulness-based stress reduction, music therapy, outdoor therapy, rewind therapy, thought field therapy, traumatic incident reduction, visual kinesthetic dissociation, and yoga. The studies did not require randomized controlled trials. The quality of the articles was assessed and of the 19 articles reviewed, only four met quality standards. The findings showed acupuncture was comparable to CBT, mantra-based therapy reduced symptomology of PTSD, yoga had better results than the control group, and the emotional freedom technique was comparable to Eye Movement Desensitizing and Reprocessing (EMDR). The majority of the emerging interventions did not have sufficient levels of effectiveness to support the claims of benefits.

Cusack et al. (2016) completed a meta-analysis on the psychological treatments of PTSD which was an expanded study of their original meta-analysis completed in 2013. The interventions examined included: brief eclectic psychotherapy, CBT which included cognitive restructuring and cognitive processing therapy, coping skills, exposure therapy, EMDR, hypnotherapy, interpersonal therapy, and narrative exposure therapy. The evidence supports the efficacy of the cognitive therapies, exposure therapy, CBT-mixed treatments, EMDR, and narrative therapy.

Discussion

The purpose of this study was to systematically review the current research on interventions for the prevention and treatment of compassion fatigue in the criminal justice system, assess their effectiveness, and determine where gaps in the research exist. This review found no evidence-based interventions for compassion fatigue in that sector. Consequently, subsequent searches were conducted to expand the scope of the search beyond criminal justice workers, and also to interventions dealing with the related construct of PTSD. The intent of the expanded searches was to provide organizational decision-makers with some guidance for fostering workplace mental health in corrections in the absence of sector-specific intervention studies on compassion fatigue.

The present author contacted a for-profit organization specializing in compassion fatigue, the TEND Organization, for studies that may not be available via academic databases. TEND provides training, education, guidance, and resources to address stress, burnout, and compassion fatigue. They were unable to provide any evidence-based studies to add to this review. There was an indication that there were ongoing studies on interventions, but no results from those studies were available when this systematic review was conducted. Given the lack of research directly related to the focal research questions, further primary research investigating interventions for compassion fatigue among working adults, especially those in corrections, is necessary. Likewise, further research on the effectiveness of PTSD treatments on compassion fatigue could also be beneficial.

Only six studies on compassion fatigue were included in this review and these six were only found after expanding the search to include other occupational groups.

Although there is an abundance of discussion around what works for reducing

compassion fatigue, there is a lack of empirical research completed on the efficacy of

prevention and treatment intervention programs. Of the six studies, only one (Merriman,

2015) used a control group and there was no random assignment to experimental versus

control conditions in any of the studies. Five of the studies offered an educational training

program and one studied music therapy as a treatment. The music therapy proved not to

be an evidence-based treatment program. The other five educational programs were all

created based on an original program designed in 2002 (ARP, Gentry et al.) to address

compassion fatigue in nursing. This systematic review found educational programs

should be at least four hours in length and can be done at one time or over several

sessions. These prevention programs all showed promise in the reduction of compassion

fatigue symptoms; however, the one study that used a controlled trial, found no

significant difference between the control group and the treatment group. This puts the

evidence of training and education in question, and it is clear there is more research

required in this area. Educating employees on the risks of working in high-risk jobs and

providing knowledge on the signs and symptoms of compassion fatigue appears to have

an impact on employee mental health by creating compassion satisfaction. Decker,

Brown, Ong, and Tiney-Ziskind (2015) described compassion satisfaction as the

enjoyment one gets from doing one's job. Increasing workers' compassion satisfaction

may help to reduce feelings of stress and contribute to reducing compassion fatigue.

Although self-care and leisure are discussed in the compassion fatigue literature

as strategies to reduce compassion fatigue symptoms, Bober and Regeher (2005)

indicated there is no evidence for these strategies being protective against the symptoms

of compassion fatigue. Bober and Regehr conducted a study to determine if coping

strategies would reduce compassion fatigue symptoms. Their study showed there was no

evidence that creating a good work-life balance, using psychotherapeutic counselling,

peer counselling, increasing supervision by managers, providing professional training, or

the reduction of trauma cases on a caseload were effective treatments for compassion

fatigue. There do not appear to be any evidence-based interventions for compassion

fatigue arising from the present systematic review. A recent meta-analysis of physical

activity on the reduction of PTSD symptoms completed by Rosenbaum et al., (2015)

supports the use of physical activity in the reduction of PTSD symptoms. Further

research on the specifics of physical activity on compassion fatigue could be beneficial.

Hensel, Ruiz, Finney, and Dewa (2015) indicated revisions to the fifth edition of

the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) included repeated

exposure to the adverse details of traumatic events over the course of one's profession as

a Criterion A stressor. This opens the door for compassion fatigue to be treated as PTSD.

Nine research syntheses on PTSD interventions were included in this review. Evidence-

based interventions for PTSD included mindfulness-based stress reduction (MBSR),

CBT, eye movement desensitization and reprocessing (EMDR), physical activity,

acupuncture, use of certain medications, group treatment, collaborative care, mantra-

based therapy, emotional freedom technique, and exposure therapy.

Implications

The present systematic review assessed the research completed on compassion

fatigue toward the goal of guiding evidence-based managers and organizations in creating

healthy workplaces. At this time, there are no identified evidence-based intervention

programs for compassion fatigue. The similarities between compassion fatigue and PTSD provide opportunities for the identification or development of interventions for compassion fatigue based on the more extensive literature on PTSD interventions. There are evidence-based interventions for PTSD and future research may show these interventions could form the basis for effective treatment of compassion fatigue. Decision-makers who need to find promising interventions for helping employees prevent or deal with compassion fatigue may find the PTSD intervention literature useful until there is increased evidence regarding interventions for compassion fatigue.

As evident from this systematic review and noted from other studies, there was no consistent and standardized measurement tool for compassion fatigue (Collins &Long, 2003; Hensel et al., 2015). There needs to be more quality research completed on measurement tools for compassion fatigue and a clear consensus on what assessment tools should be used to diagnose compassion fatigue. PTSD has similar issues to compassion fatigue in that there is not one validated assessment tool to identify people at high risk of PTSD and there are insufficient evidence-based clinical guidelines for PTSD diagnosis (Forneris et al., 2013).

Educational programs may not yet have strong evidence in their favour, but there are reasons to suspect that they may decrease symptoms of compassion fatigue. More research utilizing randomized controlled trials is needed before a claim of efficacy can be made for educational interventions. Nevertheless, there seems to be value in organizations providing educational opportunities on compassion fatigue to their staff. Educating staff and managers creates a culture of a caring organization, validates feeling of employees, and creates a supportive workplace (White, 2006). Often, without

education, managers observe employee behaviours such as low job satisfaction, employee

turnover, and poor productivity as stress or burnout when the employee could be

experiencing the early signs of compassion fatigue (Slatten, Carson, & Carson, 2011).

The early identification of employees struggling with compassion fatigue, by

management, will provide a better chance of positive outcomes, rather than employees

becoming so ill they either increase absenteeism from the workplace or have to leave

their employment altogether.

Limitations

Both the present systematic review and the recent systematic review completed by

Bercier and Maynard (2015) showed unfortunate gaps in the research literature. There

were few studies to draw on to make an analysis, and too little information to determine

results. Compassion fatigue has been discussed in the criminal justice system for at least

the last five years. Many workshops have been offered to staff. It is surprising how little

research exists on interventions for compassion fatigue.

This systematic review was completed by one individual who retrieved and

interpreted the data independently. Despite attempts at a comprehensive search, eligible

studies could have been missed. There was limited quantitative data available to perform

a meta-analysis. All the studies used in the analysis were self-report measures and not all

studies used the same measurement tools. All the studies had small sample sizes, and

there was no randomization or controls except in one study. Another limitation was the

studies for this review were only in English and it is possible there were relevant studies

missed. All the studies for compassion fatigue were completed in the USA, and there

could be cultural bias. Although this review was to focus on a specific occupational group

to provide more specific evidence-based decisions for criminal justice organizations, this review was limited by the lack of studies. Opening the review to PTSD interventions provided insight into the possible future evidence-based interventions for compassion fatigue, but there needs to be further research completed to see if PTSD interventions will be effective in the treatment of compassion fatigue. A full systematic review of PTSD interventions was not completed nor was it the scope of this systematic review.

Despite the vast amount of literature in the past 25 years on identifying compassion fatigue as a workplace mental health issue, there has been little research completed on interventions, or the establishment of a standardized assessment tool to diagnose compassion fatigue. Organizations have been created such as the TEND organization to educate workplaces on compassion fatigue, but it is acknowledged by these organizations that the research on evidence-based interventions is lacking. With little information on compassion fatigue available, it would be beneficial for organizations to partner with researchers to conduct intervention research designed to benefit both the organization and its employees and add to the knowledge-base on compassion fatigue.

Conclusions

In conclusion, this systematic review yielded six studies on compassion fatigue interventions and nine meta-analyses dealing with interventions for PTSD. This systematic review sheds light on the present state of knowledge of interventions intended to treat compassion fatigue. Criminal justice workers are at risk of developing compassion fatigue because the nature of their work demands that they be exposed to people who have been traumatized. The debilitating effects compassion fatigue can take

on the health of employees are an ongoing and growing concern. Although there has been

research into the development of theory and the identification of symptoms of

compassion fatigue, there is a lack of rigorous testing of interventions to treat compassion

fatigue. More research is needed on compassion fatigue interventions. In the interim,

organizational decision-makers will find promising interventions based on those used for

PTSD.

Table 1: Findings from studies of treatment/prevention interventions for compassion fatigue

Study: (author, date)	Purpose of the study	Sample Size (country)	Sample description& Comparison group	Intervention description	Data Collection & Analysis	Outcome Measures	Findings
Gentry, Baggerly, and Baranowsky (2004)	To develop a certified compassion fatigue specialist training program to reduce incidence of compassion fatigue. Training as treatment for mental health professionals	n=83 USA	Demographic data only collected on 7 participants. All females; mean age of 45.7 years; average of 17 years working with traumatized Control Group: no No randomization	Timeframe and location: 17-hour program delivered over 2 days compared with a 20-hour program. Components: participants attended two-day training and were provided with comprehensive training in interventions for other caregivers suffering the effects of compassion fatigue. Train-the-trainer type program based on the Accelerated Recovery Program	pretest-posttest design; paired t-test; single self-report survey completed	Compassion Satisfaction/ Fatigue Self-Test (CSFST)	No difference between the 17-hour and the 20-hour training. The combined results resulted in a significant reduction in the compassion fatigue and burnout subscale scores and increase in compassion satisfaction. Provides effective intervention, in the form of training-as-treatment, with a significant reduction in the symptoms of compassion fatigue.
Hilliard (2006)	Music therapy as a way to reduce symptoms of compassion fatigue	n=17 USA	11 females; 6 males; age range between 28-60; 1 year of experience working in hospice care Control Group: no No randomization	Timeframe and location: 6 sessions once a week for an hour after the work day at the hospital Components: participants either received didactical or ecological music therapy in a small group environment	pretest-posttest design; non-parametric statistical test including Wilcoxon test, self-report questionnaires	Compassion Satisfaction/ Fatigue Self-Test (CSFST)and Team Building Questionnaire (TBQ) completed;	No significance in either didactical or ecological music therapy on reducing compassion fatigue

Table 1: Findings from studies of treatment/prevention interventions for compassion fatigue

Study: (author, date)	Purpose of the study	Sample Size (country)	Sample description & comparison group	Intervention description	Data collection & analysis	Outcome measures	Findings
Meadors & Lamson (2008)	Educational program on reducing compassion fatigue in the ICU for nurses who work with children	n=185 USA	96.8% of participants were female with only 6 men participating; mean age of 35 years; 7 years work experience; mostly Caucasian Control Group: no No randomization	Timeframe and location: a one time, four-hour educational seminar at the children's hospital Components: four-hour session focused on the specific concerns related to compassion fatigue, stress management, and grief	pretest-posttest design; t-test; self-report questionnaires	Modified Social Readjustment Scale (SRRS) and the Index of Clinical Stress (ICS)	Post-test results showed improvements in the awareness of compassion fatigue. Participants were able to better identify strategies to handle different stressors in their life. Concluded that those experiencing high stress have higher levels of compassion fatigue. Self-help strategies such as humor or spending more time with manager showed no significant effect on reducing compassion fatigue.

Table 1: Findings from studies of treatment/prevention interventions for compassion fatigue

Study: (author, date)	Purpose of the study	Sample Size (country)	Sample description & comparison group	Intervention description	Data collection & analysis	Outcome measures	Findings
Potter, Deshields, Berger, Clarke, Olsen, & Chen (2013)	Educational program teaching resiliency for reducing compassion fatigue in oncology nurses	n=13 USA	Majority white, females with minimum of BA in Nursing Control Group: no No randomization	Timeframe and location: 5-week program, 90-min. session, once a week at a National Cancer Institute in the USA Components: 90-minute session where participants received useful strategies for managing stress at work and at home and based on the concepts of the Accelerated Recovery Program. Providing interventions such as self-regulation, intentionality, self-validation, connection, and self-care strategies.	pretest/posttest design, participants self-selected, re-evaluated after training, 3 mos. and 6 mos. after programming.	Maslach Burnout Scale-Human Services Survey (MBI); Impact Event Scale (IES-R); ProQol IV (a revised version of the CFST)	Evidence showed reduced compassion fatigue symptoms immediately after programming, at the 3 month interval, and at the 6 month interval. Nurses were better able to reduce intrusive stressful experiences and better able to manage stress.

Table 1: Findings from studies of treatment/prevention interventions for compassion fatigue

Study: (author, date)	Purpose of the study	Sample Size (country)	Sample description & comparison group	Intervention description	Data collection & analysis	Outcome measures	Findings
Flarity, Gentry, & Mesnikoff (2013)	Educational program taught to emergency nurses as a way to prevent and treat compassion fatigue.	n=59 USA	majority white, females around 40 years of age and with around 8 years experience in emergency nursing Control Group: no No randomization	Timeframe and location: 4-hour group seminar offered once at Memorial Hospital in the USA. Components: 4-hour group session offering a video showing a person who has experienced the symptoms of CF and how they have struggled, followed by information on the origin of CF, the physiological effects, signs and symptoms of CF and BO, and work specific factors that may lead to CF. In providing strategies it focused on 5 key elements identified by Dr. Gentry for prevention and treatment: self-regulation, intentionality, perceptual maturation/self-validated caregiving, connection, and self-care. Included individual and group activities. Resources were provided at the end of the program as a take away for participants.	pretest-posttest design; non-parametric statistical test including Wilcoxon test, self-report questionnaires	ProQOL V	Evidence showed reduced compassion fatigue symptoms immediately after programming. Helped workers develop self-help strategies for reducing CF symptoms and creating resiliency to prevent future CF. Suggest organizational prevention programs may help to increase compassion satisfaction and decrease compassion fatigue. Program has low costs and is easy to implement.

Table 1: Findings from studies of treatment/prevention interventions for compassion fatigue

Study: (author, date)	Purpose of the study	Sample Size (country)	Sample description & comparison group	Intervention description	Data collection & analysis	Outcome measures	Findings
Merriman (2015)	Prevention based training program for Licensed Professional Counselor Interns	n=60 USA	No demographics provided; provided to Licensed Professional Counselor Interns Control Group: yes Randomized sampling; however, participants could self-select control or treatment group	Timeframe and location: 4-hour seminar offered once to participants at various locations in Texas, USA. Components: 4-hour seminar offering education on CF and CS, self-awareness, self-efficacy, and self-care	pretest/posttest design, participant's self-selected control or treatment group, MANOVA used to evaluate results, self-reported questionnaires	ProQOL V The Five Factor Mindfulness Questionnaire (FFMQ) Interpersonal Reactivity Index (IRI) Counselor Activity Self-Efficacy Scales (CASES)	No significant difference shown between treatment and control group in regards to CF, CS, and BO. Post-tests did show a significant difference in empathy and self-awareness at the end of treatment.

Abbreviation Key

CF	Compassion Fatigue	**ProQOL IV, V**	Professional Quality of Life Scale
CS	Compassion Satisfaction	**CSFST**	Compassion/Fatigue Self-Test
BO	Burnout	**TBQ**	Team Building Questionnaire
MANOVA	Multivariate analysis of Variance	**SRRS**	Modified Social Adjustment Scale
FFMQ	Five Factor Mindfulness Questionnaire	**IRI**	Interpersonal Reactivity Index
		IES	Impact Event Scale-revised
MBI	Maslach Burnout Scale-Human Services Survey	**ICS**	Index of Clinical Stress
		CASES	Counselor Activity Self-Efficacy Scale

Table 2: Findings from studies of treatment/prevention interventions for Post-Traumatic Stress Disorder

Study: (author, date)	Purpose of the study	Sample Size	Sample description & comparison group	Components of prevention or intervention	Data collection & analysis	Findings
Sloan, Gallagher, Feinstein, Lee, and Pruneau (2011)	To provide a quantitative review of the evidence for the efficacy of telehealth interventions for PTSD. A meta-analysis.	k=13	Studies published only in English; PTSD in adults, and where there was a preventive or intervention.	Various types of telehealth offered such as video conferencing, telephone, internet-based programs.	Meta-analysis using fixed effects method.	The use of telehealth options did show reduction in PTSD symptoms although it was noted work in this area is still in its infancy and in need of further research.
Isper and Stein (2012)	Meta-analysis of the effectiveness of medication in reducing PTSD symptoms.	k=37	Studies included placebo-controlled RCT's of pharmacotherapy with adults diagnosed with, between 4-24 weeks of treatment.	Study looked at a variety of medications used in the treatment of PTSD from Monoamine oxidase inhibitors (MAOIs); Reversible inhibitors of monoamine oxidase A (RIMAs); and SSRIs.	Mixed-model meta-regression.	Meta-analysis supports the efficacy of medications in treating PTSD over the short-term and the efficacy of SSRIs and venlafaxine. There was no efficacy for the use of benzodiazepines despite the continued popularity of those medications.

Table 2: Findings from studies of treatment/prevention interventions for Post-Traumatic Stress Disorder

Study: (author, date)	Purpose of the study	Sample Size	Sample description & comparison group	Components of prevention or intervention	Data collection & analysis	Findings
Sloan, Gallagher, Feinstein, Keane, and Beck (2013)	To conduct a meta-analysis on the efficacy of group treatment for adults suffering from PTSD.	k=16	Studies published only in English; PTSD in adults, and where there was a group treatment and mostly RCT's.	Any type of group intervention program targeting trauma PTSD survivors	Meta-analysis using random effects method.	Results showed group treatment was better than no treatment but may be less efficacious for repeated traumatization or more chronic PTSD.
Forneris, Gartiehner, Brownley, Gaynes, Sonis, Coker-Schwimmer, Jonas, Greenblatt, Wilkins, Woodell, and Lohr (2013)	A systematic review of the available literature on the effectiveness of interventions to prevent PTSD.	k=19 USA	Studies published only in English between 1980 and 2012; PTSD in adults, and where there was a preventive or intervention	*Psychological Interventions: Battlemind; CBT; CBT plus hypnosis; CT; debriefing; prolonged exposure therapy; psychoeducation; self-help materials; and supportive counselling. *Pharmacological Interventions *Collaborative Care * Psychological with Pharmacology	Random effects models for meta-analysis of multiple studies whose interventions and populations were sufficiently similar to justify combining the results.	Limited number of studies which met inclusion criteria but what could be concluded from the 19 studies was CBT is more effective than supportive counselling in reducing PTSD symptoms. Collaborative care is better than usual care for decreasing symptom severity after injury; and debriefing is not an effective intervention.

Table 2: Findings from studies of treatment/prevention interventions for Post-Traumatic Stress Disorder

Study: (author, date)	Purpose of the study	Sample Size	Sample description & comparison group	Components of prevention or intervention	Data collection & analysis	Findings
Banks, Newman, and Saleem (2015)	A systematic review of the literature on mindfulness based interventions for PTSD.	k=12	Studies included only adult samples; 4 RCT; 1NRCT; 3UCT; and 4 pilot studies. Looked at different types of trauma, heterogeneous samples, and had reliable and valid outcome measures.	Mindfulness Based Stress Reduction were the main intervention used in all the studies.	Did not discuss analysis.	Pilot studies: all reported improvement in symptoms. UCT: positive findings of reduction of PTSD symptoms; however, participants also receiving psychotherapy at the same time. RCT: 3 of 4 reported improvements in PTSD symptoms. NRCT: no significant effects shown. Overall findings show mindfulness based interventions are effective in reducing PTSD symptoms.

Table 2: Findings from studies of treatment/prevention interventions for Post-Traumatic Stress Disorder

Study: (author, date)	Purpose of the study	Sample Size	Sample description & comparison group	Components of prevention or intervention	Data collection & analysis	Findings
Keuster, Niemeyer, and Knaevelsrud (2015)	A meta-analysis of internet-based interventions for PTSD.	k=20	This study did not do a summary of sample description. Only used RCT's studies.	Various IBI's such as Interapy, expressive writing, and IBI-CBT.	Meta-analysis using random effects model and mixed effects analyses.	Support shown for the use of IBI-CBT at reducing the symptoms of PTSD although it is still very early on in the development of IBI's.
Rosenbaum, Vancampfort, Steel, Newby, Ward, and Stubbs (2015)	A meta-analysis of the impact of physical activity and exercise interventions on the reduction of PTSD symptoms.	k=4	Studies published only in English; PTSD in adults between the age of 34-52 years of age, and where there was RCT's.	2 studies looked at yoga; 1 study looked at aerobic and resistant-based activity; and 1 study only aerobic activity. Length of interventions ranged from 6-12 weeks.	Random effects meta-analysis.	Results showed that compared to control groups, physical activity significantly reduced symptoms of PTSD.

Table 2: Findings from studies of treatment/prevention interventions for Post-Traumatic Stress Disorder

Study: (author, date)	Purpose of the study	Sample Size	Sample description & comparison group	Components of prevention or intervention	Data collection & analysis	Findings
Metcalf, Varker, Forbes, Phelps, Dell, DiBattista, Ralph, and O'Donnell (2016)	A systematic review of complementary and alternative therapies (emerging PTSD treatments)	k=19	Studies included adult samples and was not restricted to RCT's, studies only published in English, and samples diagnosed with acute stress disorder or PTSD. Studies were completed between 2003-2014	15 emerging strategies: acceptance and commitment therapy; acupuncture; art therapy; canine therapy; emotional freedom technique; equine therapy; mantra based meditation; MBSR; music therapy; outdoor therapy; rewind therapy; thought field therapy; traumatic incident reduction; visual kinesthetic dissociation; and yoga.	Meta-analysis not able to be completed due to distinct differences between the therapies. Interventions were assessed using the Cochrane method for quality and 4 studies were deemed moderate quality and 15 were low to very low quality.	Only 4 studies met quality criteria and results showed acupuncture was comparable to CBT. Mantra based meditation reduced symptomology of PTSD. Yoga showed improvement over control and emotional freedom technique was comparable to EMBR. The majority of emerging interventions had insufficient levels of evidence to support their efficacy and claims of benefits.

Table 2: Findings from studies of treatment/prevention interventions for Post-Traumatic Stress Disorder

Study: (author, date)	Purpose of the study	Sample Size	Sample description & comparison group	Components of prevention or intervention	Data collection & analysis	Findings
Cusack, Jonas, Forneris, Wines, Sonis, Middleton, Feltner, Brownley, Olmstead, Greenbelt, Weil, and Gaynes (2016)	An updated meta-analysis of psychological treatments of PTSD. (original study completed in 2013)	k=64	Studies published only in English; severe PTSD in adults, and where there was RCT's with at least 4 weeks' intervention.	Studies looked at: brief eclectic psychotherapy; CBT including CR, CPT, and coping skills; exposure therapy; EMDR; hypnotherapy; interpersonal therapy; and narrative exposure therapy.	Random effects meta-analysis.	The evidence supports the efficacy of CT including CPT; exposure therapy; CBT-mixed treatments; EMDR; and narrative exposure therapy. The head-to-head evidence was insufficient to determine if psychotherapies differ in effectiveness.

Abbreviations

NRCT	non-randomized controlled trial	**RCT**	random control trials
UCT	uncontrolled trial	**SSRI**	Selective Serotonin Reuptake Inhibitors
MBSR	Mindfulness-based Stress Reduction	**CBT**	Cognitive Behaviour Therapy
CR	Cognitive Restructuring	**EMDR**	Eye Movement Desensitizing and Reprocessing
CT	Cognitive Therapy	**CPT**	Cognitive Processing Therapy
IBI	Internet-based intervention		

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