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The effects of Compassion Cultivation Training (CCT) on health-care workers

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Abstract

Background: The main objective of this pilot study was to investigate the effects of the Compassion Cultivation Training (CCT) on various aspects of burnout and job satisfaction in health-care workers. Specifically, this study sought to investigate whether CCT reduces work-related burnout, interpersonal conflict, as well as increases of mindfulness, compassion toward the self, fears of compassion, and job satisfaction scores.

Method: Participants consisted of 62 adults, who identified as health-care workers between the ages 22 and 80. All participants completed an 8-week CCT course and filled out questionnaires related to self-compassion, fears of compassion, mindfulness, burnout, job satisfaction, and interpersonal conflict. The questionnaires were administered by email during the first, middle, and last weeks of CCT, as well as 1 month after completion of CCT (follow-up).

Results: The results for this study demonstrated significant improvements in participants' self-compassion, mindfulness, and interpersonal conflict scores. In addition, the results indicated marginally significant improvements in self-reported job satisfaction scores. No differences were observed on the burnout measure due to possible floor effects.

Conclusions: The general conclusions of this study are that CCT may be helpful at improving several aspects of health in health-care providers, such as self-reported mindfulness, self-compassion, compassion toward others, and interpersonal conflict. The implications of this study are that this training may promote mental health resilience in health-care workers, improve patient care, and may be helpful in burnout prevention. Further implications and future directions are discussed.

Key Points

1 Compassion Cultivation Training appears to have potential for increasing perceived self-compassion and mindfulness, and reducing fear of compassion in health-care workers.
2 Self-compassion scores are negatively associated with those of fear of compassion.
3 Increased mindfulness practice may be related to better job satisfaction scores.

Introduction

Burnout refers to severe physical and emotional exhaustion (Maslach & Jackson, 1986), which can lead to psychological and physiological distress (Jain, Lall, McLaughlin, & Johnson, 1996) and increased mental health problems (Richings, Khara, & McDowell, 1986; Tyssen, Vaglum, Gronvold, & Ekeberg, 2001). Burnout can contribute to decreased productivity and empathy toward others (McHolm, 2006), as well as increased turnover rates (Pfifferling & Gilley, 2000). Health-care workers, including medical doctors, nurses, physical and occupational therapists, mental health professionals, and administrative hospital staff, appear to be among

professionals most affected by burnout (Schaufeli & Greenglass, 2001).

A recent *Journal of American Medical Association* (JAMA) report suggests that 46% of physicians reported at least one symptom of burnout, such as work dissatisfaction, emotional exhaustion, or depression (Shanafelt et al., 2012). These symptoms are not specific to physicians, however. In fact, other service professionals, such as administrative staff, are also prone to similar levels of burnout (Leiter & Schaufeli, 1996). These findings are not surprising as health-care workers, physicians, nurses, and staff alike, frequently experience shortages of time to complete tasks, as well as personnel shortage, while requiring extensive amounts of empathy toward others in high-pressure environments. Combined together, these factors often lead to emotional burnout, which may subsequently lead to reduced achievement motivation (Schaufeli & Greenglass, 2001), reduced job satisfaction (Myhren, Ekeberg, & Stokland, 2013), and increased interpersonal conflict (Fischer et al., 2013).

A common reason for emotional burnout in health-care workers is *empathic distress* (Klimecki & Singer, 2012). Empathic distress is a form of an emotional struggle, which occurs when witnessing the suffering of others while empathising with them (Klimecki & Singer, 2012). When an individual becomes distressed by the suffering of others, he or she will usually want to withdraw from the distressing situation. In fact, an empathically distressed individual may have higher levels of emotional exhaustion and overwhelm, and may be less motivated to help the person who is struggling (Klimecki & Singer, 2012). An individual who is experiencing emotional exhaustion is also likely to experience depression (Richings et al., 1986) and might struggle with giving compassion to others, receiving compassion from others, or practicing self-compassion (Gilbert, McEwan, Catarino, & Baião, 2014).

Burnout Prevention

Interestingly, teaching participants to practice loving kindness meditation (LKM), a type of meditation which focuses on mindfulness, as well as sending kind wishes to oneself (i.e., self-compassion) and others (i.e., compassion toward others), seems to eradicate the effects of empathic distress. More specifically, after a LKM practice, participants are still able to perceive the suffering of others and are able to empathise with them. However, they are also able to cultivate positive emotions, which appear to serve as a buffer against empathic distress (Klimecki, Leiberg, Lamm, & Singer, 2012). For instance, in their study, Klimecki et al. (2012) presented participants with distressing videos, in which humans were subjected to physical or emotional pain. This task resulted in higher activation of participants' anterior insula and anterior medial cingulate cortices. These areas are known to be involved in processing of empathic pain and distress (Klimecki et al., 2012; Klimecki & Singer, 2012). Participants who viewed these videos reported higher negative affect compared to viewing emotionally neutral videos. However, after participants received LKM training, they reported an increase in positive affect after watching the distressing videos, and were also observed to have increased activation in brain regions associated with positive affect, such as the orbitofrontal cortex, ventral tegmental area, and the putamen. These results can be interpreted to mean that LKM training can help participants reduce empathic distress (Klimecki et al., 2012; Klimecki & Singer, 2012).

Although mindfulness practices are associated with improved mental and physical health and reduced risk of burnout (Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2004; Roeser et al., 2013; Shapiro, Brown, & Biegel, 2007; Siu, Cooper, & Phillips, 2014), only a handful of research studies have explored the role of self-compassion in burnout prevention (Birnie, Speca, & Carlson, 2010; Boellinghaus, Jones, & Hutton, 2014; Ringenbach, 2009). Briefly, self-compassion involves practicing compassion for oneself during the time of suffering. Self-compassion consists of three elements— mindfulness (present-focused awareness), common humanity (the understanding that one's experience is similar to others, thus potentially reducing one's sense of alienation), and self-kindness (using kind gestures or phrases toward oneself to support oneself; Neff, 2003a, 2003b; Neff & Germer, 2013). Self-compassion and LKM practices have been shown to improve participants' self-reported positive affect, as well as social connection, and self- and other-focused affect, implying that these may serve as potential burnout prevention tools (Seppälä, Hutcherson, Nguyen, Doty, & Gross, 2014).

Compassion Cultivation Training

In order to further explore the effects of compassion and self-compassion training on burnout prevention, the authors elected to focus on Compassion Cultivation Training (CCT), an interactive 8-week compassion training program. CCT encompasses all of the above listed burnout prevention skills, that is, mindfulness, self-compassion, and LKM (Jazaieri et al., 2013). CCT has been shown to improve participants' scores of compassion toward oneself and others (Jazaieri et al., 2013) in a nonclinical sample. In addition, compared to waitlist control, nonclinical participants who completed CCT reported increased levels of happiness, improved

mindfulness skills, reduced emotion suppression and reduced worry (Jazaieri et al., 2014), as well as reduced mind-wandering to unpleasant subjects (Jazaieri et al., 2016). Clinically, CCT training has also been associated with reduced pain and anger self-reported scores (Chapin et al., 2014), as well as reportedly reduced depression, anxiety, stress, and empathic distress (Pons, 2014) in a nonclinical community sample. Finally, a recent dissertation study found that CCT can be helpful in reducing empathic distress and increasing compassion scores in social workers who work with Veterans (Prado, 2016). Although the above-mentioned findings are promising in terms of burnout prevention, these studies have neither directly measured the effects of CCT on burnout nor on its related constructs (i.e., job satisfaction, interpersonal conflict, and fear of compassion).

Present Study

The aims of this study were to extend the previous literature findings by measuring the effects of CCT on self-reported burnout among health-care professionals, as well as other burnout-related struggles, such as self-reported interpersonal conflict and job satisfaction. In addition, we wanted to evaluate the effects of CCT on building burnout resilience by increasing participants' mindfulness and self-compassion scores. In order to study one's capacity for providing compassion for oneself or others, we also studied the effects of CCT on reducing the fear of compassion scores. For this study, we have elected to include any professionals working in health-care settings, that is, physicians, nurses, mental health professionals, physical therapists, hospital chaplains, and administrative staff.

Burnout Resilience Factors

Previous research suggests that LKM is linked to increased mindfulness and self-compassion (Galante, Galante, Bekkers, & Gallacher, 2014). In addition, mindfulness and self-compassion scores appear to be negatively correlated to burnout (Barnard & Curry, 2011; Luken & Sammons, 2016; Montero-Marin et al., 2015, 2016). Given these findings, burnout resilience was operationalised as increased scores on mindfulness and self-compassion outcomes.

The research hypotheses were as follows: We predicted that CCT would reduce burnout over time (H1), as well as burnout-related experiences, such as interpersonal conflict (H2), and job satisfaction (H3). In addition, we predicted that after participating in CCT, participants would demonstrate increases in mindfulness and

self-compassion (H4), and reductions in fears of compassion (H5).

Methods

Participants

Participants consisted of 119 health-care workers (17 males and 102 females). Participants were recruited from a group of individuals who had registered for the CCT course as a part of a free continued education initiative offered at Sharp Memorial Hospital in San Diego, CA. All participants who enrolled in the CCT course were asked if they wanted to partake in the study, and were informed that the decision to not participate in the research did not preclude them from being able to partake in the CCT program. No incentives were offered for research participation.

Out of the 119 participants who initially enrolled in the study, 24 dropped out of the CCT course due to time constrains while 33 only completed the first baseline assessments but not any of the follow-up assessments. Their data were excluded from the final analysis, making the total for this study $N = 62$ (12 males and 50 females). The participants were all hospital or private practice workers, 36% of them being nurses, 13% mental health workers (psychologists, marriage and family counsellors, and social workers), 3% were physicians, 5% physical therapists and the rest consisted of other hospital staff (e.g., chaplains and administrative staff). Most of the participants identified as White (82%). The rest of the participants identified as Asian (4%), Middle Eastern (1.5%), Native American (1.5%), African American (1%), and other (10%). Nearly half of the sample (49%) reported having graduate levels of education, while 3% completed high school, and the rest completed some level of college education.

Measures

Self-compassion

The Self-Compassion Scale—Short Form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) is a 12-item validated scale, which measures self-compassion across six subscales: Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, and Over-identification. The SCS-SF is rated on a 5-point Likert Scale, ranging from 1 (*almost never*) to 5 (*almost always*), with sample items including, "I'm disapproving and judgmental about my own flaws and inadequacies" and "I'm intolerant and impatient towards those aspects of my personality I don't like." This scale has demonstrated

good test–retest reliability and internal consistency, closely matching those of the original version of the Self-Compassion Scale (Neff, 2003b; Raes et al., 2011). Internal consistency for this study was .94.

Mindfulness

The Toronto Mindfulness Scale (TMS; Lau et al., 2006) is a validated 13-item scale that measures mindfulness and psychological flexibility. The TMS is rated on a self-report Likert scale, ranging from 0 (*not at all*) to 4 (*very much*) with sample items being "I was curious to see what my mind was up to from moment to moment" and "I was receptive to observing unpleasant thoughts and feelings without interfering with them." The TMS has strong internal consistency and reliability (Lau et al., 2006). The internal consistency for this study was .95.

Burnout

Burnout was measured using the Copenhagen Burnout Inventory (CBI; Kristensen, Borritz, Villadsen, & Christensen, 2005), a validated self-report 19-item scale, which measures one's personal, as well as work-related, and patient-related burnout. The CBI has been found to have high internal reliability (Kristensen et al., 2005). The internal reliability for the current study was .95. The CBI is scored on a Likert scale with responses ranging from 0 (*almost never*) to 4 (*almost always*). Sample items from the CBI include "How often do you feel tired?" and "Do you find it hard to work with clients?"

Job satisfaction

The Brief Index of Affective Job Satisfaction (BIAJS; Thompson & Phua, 2012) was used to measure satisfaction at work. The BIAJS is a validated self-report 4-item Likert scale, which measures the individual's satisfaction with his or her professional employment. The BIAJS is reported to have high internal consistency and good convergent and criterion-related validity. The internal consistency of the BIAJS for this study was .92. Sample items from the BIAJS include "I find real enjoyment in my job" and "Most days I am enthusiastic about my job."

Interpersonal conflict

Interpersonal conflict was measured using the Interpersonal Conflict Scale (ICS; Harvey, Blouin, & Stout, 2006). The ICS is 5-item self-report validated scale that measures conflict experienced at work (Harvey et al., 2006). The items are scored on a Likert scale ranging from 1 (*never*) to 5 (*very often*). Sample items include, "Had an argument with someone," and "Been yelled at by someone." The ICS is reported to have good internal consistency (Harvey et al., 2006). The internal consistency for this study was .85.

Fears of compassion

The Fears of Compassion Scale (FOCS; Gilbert, McEwan, Matos, & Rivis, 2011) was used to measure fears of compassion. The FOCS is a 38-item self-report scale, which comprises three subscales: (1) fear of expressing compassion for others; (2) fear of receiving compassion from others; and (3) fear of compassion towards oneself. The items on FOCS are scored on a Likert scale ranging from 0 (*don't agree at all*) to 4 (*completely agree*). Sample items include "People will take advantage of me if they see me as too compassionate" and "I fear that if I am more self-compassionate I will become a weak person." The internal consistency in the present study of this measure was .97.

Procedure

All measures were administered online. Participants who agreed to partake in the study received an email link to participate in online questionnaires via Qualtrics Survey Software (Qualtrics, Provo, UT, USA). The participants' data were anonymous and were coded by a unique participant number. Participants received the same set of questionnaires at four different time points: immediately prior to taking CCT (i.e., baseline), in the middle of the course, immediately after the course ended, as well as 1 month after the completion of the course (i.e., follow-up). This follow-up period was chosen due to the high attrition rates for longer follow-up periods previously conducted with this population.

Compassion Cultivation Training

CCT is a protocol developed by Stanford University School of Medicine.[3] CCT protocol consists of eight, 2-hr weekly group sessions,[4] in which participants are taught mindfulness, LKM, as well as compassion and self-compassion skills through discussion, psychoeducation and experiential practices (Jazaieri et al., 2013). The experiential practices for this study included both formal 20-min guided meditations, as well as informal practices, such as gently sending loving-kindness wishes to passersby. Participants were encouraged to undertake daily

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[1]Specifically, CCT was created by Geshe Thupten Jinpa, Ph. D. in collaboration with researchers and practitioners at Stanford University and the Center for Compassion and Altruism Research and Education (CCARE).

[2]CCT consists of six steps: mindfulness, loving kindness and compassion for a loved one, loving kindness and compassion for the self, compassion toward others through embracing common humanity, compassion toward all beings, and active compassion practice.

formal and informal meditation practices outside of class time.

Results

A series of one-way measures analysis of variances (ANOVAs) was conducted using SPSS 22.0 and Excel 2010 to examine the effect of time on each of the outcome variables at pre-test, post-test, and 1-month follow up.

Bonferroni Correction

In order to account for the inflated Type I error risk, we tested the hypotheses against a Bonferroni-corrected alpha level of 0.008. The results yielded significant findings for change over time for the following dependent variables: Self-Compassion, Fear of Compassion I: Giving Subscale, Fear of Compassion III: Self-Compassion Subscale, and the Toronto Mindfulness Scale. None of the other variables (i.e., Burnout, Job Satisfaction, Interpersonal Conflict, and Fear of Compassion II: Receiving Compassion) reached significance after correction.

Participants who did not complete the surveys at baseline or after completing the course were excluded from the analysis. Prior to running statistical analyses the data were examined for missing data and statistical assumptions were tested. Six of the participants had missing data for some of the questions for some of the questionnaires. Overall, the cells of missing data constituted approximately 1% of all cell cases. These cases were still included in the analysis provided that there were overall sufficient data to conduct the analysis, thus some of the within group factors had uneven number of cases.

The skewness and kurtosis were within the acceptable range and the data met the homogeneity of variance assumption. The demographic data for the participants that completed the study, as well as the intention to treat sample (ITT) are displayed in Table 1.

Overall, the completers and the ITT samples were comparable, with several exceptions. Particularly, the proportion of female participants who dropped out was larger than the proportion of male participants who dropped out of the study (i.e., 51% vs. 37%, respectively). Chi-square tests did not yield differences in drop-out rates across gender, $\chi^2(1) = 0.28$, $p > .05$, ethnicity, $\chi^2(5) = 3.31$, $p > .05$, marital status, $\chi^2(5) = 5.20$, $p > .05$, education level, $\chi^2(5) = 3.28$, $p > .05$, or occupation, $\chi^2(4) = 2.52$, $p > .05$.

A series of repeated-measures ANOVAs with "Time" as a factor were run to analyse the data. Initial analyses using demographic variables as between-group factors did not yield any significant findings across

Table 1 Demographical characteristics

	Completer N (%)	ITT sample N (%)
Sex		
Male	12 (19)	17 (16)
Female	50 (81)	102 (84)
Age M years (±SD)		
Age	51.23 (10.77)	50.30 (11.74)
Ethnicity		
White	51 (83)	96 (81)
African American	1 (1.5)	1 (1)
Asian	2 (3)	5 (4)
Middle Eastern	1 (1.5)	2 (2)
Native American	1 (1.5)	2 (2)
Other	6 (9.5)	13 (11)
Marital status		
Single	7 (11)	23 (19)
Living with a partner	4 (6)	10 (8)
Married	37 (60)	61 (51)
Separated	1 (2)	1 (1)
Divorced	12 (19)	23 (19)
Widowed	1 (2)	1 (1)
Highest level of education		
High school	2 (3)	2 (2)
Some college	6 (10)	11 (9)
Associate	6 (10)	14 (12)
Bachelors	17 (27)	34 (29)
Masters	21 (34)	44 (37)
Doctorate	10 (16)	14 (12)
Occupation		
Mental health	8 (13)	15 (13)
Nurse	22 (36)	43 (36)
Other	27 (43)	51 (43)
Physical therapist	3 (5)	6 (5)
Physician	2 (3)	4 (3)

ITT, intended to treat sample; *SD*, standard deviation.

demographics; hence the data were collapsed over the demographical variables. The overall findings are presented in Table 2.

Results from the repeated measures ANOVA revealed that participants did not demonstrate significant reductions in burnout, $F(3, 72) = 1.15$, $p = .36$ or interpersonal conflict, $F(3, 72) = 1.27$, $p = .29$ over time. Thus, H1 and H2 were not supported. However, the results indicated that improvement in participants' job satisfaction over time was approaching significance, $F(3, 72) = 2.62$, $p = .057$ with a significant linear trend, $F(1, 24) = 5.82$, $p < .05$. Thus, H3 was partially supported.

In support of H4, the results indicated that the participants demonstrated a significant improvement in mindfulness over time, $F(3, 51) = 11.50$, $p < .01$, and self-compassion, $F(3, 57) = 14.44$, $p < .01$ with significant linear trends for each, $F(1, 17) = 24.33$, $p < .01$ and $F(1, 19) = 26.77$, $p < .01$, respectively suggesting that

Table 2 Results of repeated-measures analysis of variance (ANOVA) for each of the outcome variables

Measure	Baseline Mean (SD)	Post Mean (SD)	Follow-up Mean (SD)	F value	p value
Brief Index of Job Satisfaction Scale	4.06 (0.75)	4.25 (0.79)	4.32 (0.70)	2.62	.057
Interpersonal Conflict Scale	2.03 (0.80)	1.85 (0.73)	1.79 (0.72)	1.27	.29
Self-Compassion Scale	3.14 (0.70)	3.63 (0.57)	3.70 (0.69)	14.44	<.01
Fear of Compassion I: Giving	2.3 (0.71)	1.9 (0.66)	1.9 (0.85)	5.48	<.01
Fear of Compassion II: Receiving	2.0 (0.69)	1.7 (0.79)	1.7 (0.80)	2.37	.08
Fear of Compassion I: Self-Compassion	1.9 (0.80)	1.5 (0.65)	1.5 (0.66)	5.44	<.01
Toronto Mindfulness Scale	3.1 (0.61)	3.7 (0.59)	3.5 (0.65)	11.5	<.01
Copenhagen Burnout Inventory	1.5 (0.83)	1.2 (0.74)	1.2 (0.80)	1.15	.36

SD, standard deviation.

the participants continued to improve in mindfulness and self-compassion practices over time.

In terms of assessing the participants' fears of compassion, the results found that overall the participants' fears of compassion reduced over the course of training and continued to decrease during the follow-up period.

Specifically, the participants demonstrated significantly reduced fear of self-compassion, $F(3, 54) = 5.44$, $p < .01$, giving compassion to others, $F(3, 57) = 5.48$, $p < .01$. Fear of receiving compassion from others also decreased over time, however these changes were not significant, $F(3, 57) = 2.37$, $p = .08$. In addition, two of the three components of fears of compassion showed a linear trend, $F(1, 18) = 9.86$, $p < .01$ for self-compassion, and $F(1, 19) = 8.34$, $p < .01$ for fear of giving compassion to others, as well as a linear trend approaching significance for receiving compassion from others, $F(1, 19) = 4.00$, $p = .06$, suggesting that these continued to reduce over time.

Exploratory analyses

Given that research on compassion in this population is limited we wanted to explore the correlational relationships between the dependent variables used in this study. Pearson correlations were conducted on the change scores (i.e., post-CCT minus baseline). The (i.e., change) scores were calculated for each variable and Pearson correlations were conducted on these new scores. First, a strong inverse correlation was found between Fear of Compassion and Self-Compassion ($r = -0.56$, $p < .01$), suggesting that an increase in one of these variables (e.g., self-compassion) is associated with the decrease of the other (i.e., fear of compassion). In addition, Burnout was positively correlated with Fear of Compassion ($r = 0.48$, $p < .01$) and Interpersonal Conflict ($r = 0.32$, $p < .01$), and negatively correlated with Self-Compassion ($r = -0.23$, $p < .05$). Furthermore, Mindfulness was positively correlated with Self-Compassion ($r = 0.32$, $p < .01$) and Job Satisfaction ($r = 0.27$, $p < .05$). In addition, Mindfulness was also

significantly inversely correlated with Fear of Compassion ($r = -0.24$, $p < .05$) and marginally inversely correlated with Interpersonal Conflict ($r = 0.22$, $p = .057$).

Discussion

The purpose of this pilot study was to determine if CCT has the potential for reducing reported burnout or for increasing mindfulness and self-compassion scores—two factors thought to increase resilience to burnout—among allied health-care workers. The results revealed that CCT does not appear to decrease burnout or interpersonal conflict scores in this population. It is possible that the lack of CCT's effect on burnout scores may be attributed to this sample's apparent floor effect, that is, the participants in this study did not appear to exhibit high levels of burnout at baseline. On the other hand, the results demonstrated that CCT could be helpful in increasing mindfulness, self-compassion, and job satisfaction scores, while reducing the fears of compassion scores for this population. In addition, the study also found inverse correlations between burnout and self-compassion scores, as well as positive associations between burnout and fear of compassion and interpersonal conflict scores. Finally, mindfulness scores were positively associated with self-compassion and job satisfaction scores, and negatively correlated with fear of compassion and interpersonal conflict scores. These findings might be interpreted to mean that learning mindfulness and compassion skills, such as those learned in CCT, may reduce the participants' reported rates of burnout and its associated negative effects (e.g., interpersonal conflict and fear of compassion). Additional research would be necessary to further evaluate this claim.

Given the previous literature findings which state that self-compassion and mindfulness are associated with reduced burnout in health-care providers (Birnie et al., 2010; Cohen-Katz et al., 2004; Roeser et al., 2013; Shapiro et al., 2007), it is surprising that CCT did not yield the same results. However, if the participants in this pilot

study did in fact exhibit floor effects in terms of their baseline burnout levels, then it is possible that the results seen in this study may not resemble those found in the population with burnout.

Limitations and Future Directions

One of the main limitations of this pilot study is the lack of a comparison control group. Future studies would benefit from a randomised control trial with a wait-list or an equivalent placebo control group. In addition, it would be beneficial to measure the effects of CCT on meaningful work-related activities, such as kindness and compassion behaviours toward oneself and others. Furthermore, this study did not separate compassion and burnout from empathic distress. A follow-up study using an Empathic Distress Scale (Stickle, 2016) may be beneficial in determining the effects of CCT on reducing participants' self-reported levels of empathic distress. Another limitation of the study has to do with its generalisability. Both the potential burnout floor effects, as well as the selection of the providers in this sample (all came from hospitals and clinics from the greater San Diego area) greatly limits the generalisability of this study. Future studies may benefit from screening out participants with low burnout levels or by comparing the benefits of CCT between the participants who endorse high burnout and those who do not.

Another limitation of this study is the lack of demographical diversity. Given that this study focused on health-care workers, the educational levels and other participant factors were generally similar across this sample. In order to further evaluate the effectiveness of courses such as CCT on reducing burnout, it may be advisable to either conduct a similar study with a more diverse sample or to compare the outcomes of health-care providers to other professionals (e.g., police officers). The participants who enrolled in CCT were almost entirely female. Interestingly, 51% of female participants dropped out of the study compared to 37% of male participants. While it is not clear why exactly this occurred, it does seem likely that more women might enrol in courses, such as CCT, possibly due to the fact that in this geographical region, there are more females in the health-care field compared to males.

An additional limitation has to do with the non-specific focus on the various health-care workers recruited for this study. Although no significant differences were found on any of the dependent variables across the different professions, it is possible that certain settings (e.g., private vs. public clinics) may lead to varying work experiences and thus might differentially affect burnout rates. Thus, future studies may benefit from

separating out these participant factors. Future studies may also benefit from measuring the effects of formal home practice on outcomes, such as compassion toward others, self-compassion, stress, and burnout reduction. Previous studies found that the length and duration of home practice predicted improvement on outcomes more than the length and duration of course sections (i.e., class time; Carmody & Baer, 2008). Thus, it seems worthwhile to include home practice as an independent variable in future studies.

Finally, future studies may be interested in analysing the potential benefits of teaching CCT to a clinical population. Compassion and self-compassion-based interventions have already demonstrated significant benefits for these populations. In particular, LKM and self-compassion, both of which are included in CCT, have been found to be helpful in reducing depression, anxiety, and post-traumatic stress disorder symptoms in people with mental health disorders (Kearney et al., 2013; Van Dam, Sheppard, Forsyth, & Earleywine, 2011). To date, only one study has looked at potential clinical benefits of CCT in a community sample, finding reduced depression, anxiety, stress, and empathic distress scores in this sample after CCT (Pons, 2014). Thus, it might be beneficial to further explore the effect of CCT for the clinical population which meets the clinical diagnostic criteria for these disorders.

Acknowledgements

References

Barnard, L. K., & Curry, J. F. (2011). Self-compassion: Conceptualizations, correlates, & interventions. *Review of General Psychology*, *15*(4), 289. https://doi.org/10.1037/a0025754

Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health*, *26*(5), 359–371. https://doi.org/10.1002/smi.1305

Boellinghaus, I., Jones, F. W., & Hutton, J. (2014). The role of mindfulness and loving-kindness meditation in cultivating self-compassion and other-focused concern in health care professionals. *Mindfulness*, *5*(2), 129–138. https://doi.org/10.1007/s12671-012-0158-6

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical

and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine*, *31*(1), 23–33. https://doi.org/10.1007/s10865-007-9130-7

Chapin, H. L., Darnall, B. D., Seppala, E. M., Doty, J. R., Hah, J. M., & Mackey, S. C. (2014). Pilot study of a compassion meditation intervention in chronic pain. *Journal of Compassionate Health Care*, *1*(1), 1–12. https://doi.org/10.1186/s40639-014-0004-x

Cohen-Katz, J., Wiley, S. D., Capuano, T., Baker, D. M., & Shapiro, S. (2004). The effects of Mindfulness-based Stress Reduction on nurse stress and burnout: A quantitative and qualitative study. *Holistic Nursing Practice*, *18*(6), 302–308.

Fischer, M., Mitsche, M., Endler, P., Mesenholl-Strehler, E., Lothaller, H., & Roth, R. (2013). Burnout in physiotherapists: Use of clinical supervision and desire for emotional closeness or distance to clients. *International Journal of Therapy and Rehabilitation*, *20*(11), 550–558.

Galante, J., Galante, I., Bekkers, M. J., & Gallacher, J. (2014). Effect of kindness-based meditation on health and well-being: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, *82*(6), 1101. https://doi.org/10.1037/a0037249

Gilbert, P., McEwan, K., Catarino, F., & Baião, R. (2014). Fears of compassion in a depressed population implication for psychotherapy. *Journal of Depression and Anxiety*, *S2*, 003. https://doi.org/10.4172/2167-1044.S2-003

Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fear of compassion: Development of a self-report measure. *Psychology and Psychotherapy*, *84*(3), 239–255. https://doi.org/10.1348/147608310X526511

Harvey, S., Blouin, C., & Stout, D. (2006). Proactive personality as a moderator of outcomes for young workers experiencing conflict at work. *Personality and Individual Differences*, *40*(5), 1063–1074. https://doi.org/10.1016/j.paid.2005.09.021

Jain, V. K., Lall, R., McLaughlin, D. G., & Johnson, W. B. (1996). Effects of locus of control, occupational stress, and psychological distress on job satisfaction among nurses. *Psychological Reports*, *78*(3c), 1256–1258.

Jazaieri, H., Jinpa, G. T., McGonigal, K., Rosenberg, E. L., Finkelstein, J., Simon-Thomas, E., … Goldin, P. R. (2013). Enhancing compassion: A randomized controlled trial of a compassion cultivation training program. *Journal of Happiness Studies*, *14*(4), 1113–1126. https://doi.org/10.1007/s10902-012-9373-z

Jazaieri, H., Lee, I. A., McGonigal, K., Jinpa, T., Doty, J. R., Gross, J. J., & Goldin, P. R. (2016). A wandering mind is a less caring mind: Daily experience sampling during compassion meditation training. *The Journal of Positive Psychology*, *11*(1), 37–50. https://doi.org/10.1080/17439760.2015.1025418

Jazaieri, H., McGonigal, K., Jinpa, T., Doty, J. R., Gross, J. J., & Goldin, P. R. (2014). A randomized controlled trial of compassion cultivation training: Effects

on mindfulness, affect, and emotion regulation. *Motivation and Emotion*, *38*(1), 23–35. https://doi.org/10.1007/s11031-013-9368-z

Kearney, D. J., Malte, C. A., McManus, C., Martinez, M. E., Felleman, B., & Simpson, T. L. (2013). Loving-kindness meditation for posttraumatic stress disorder: A pilot study. *Journal of Traumatic Stress*, *26*(4), 426–434. https://doi.org/10.1002/jts.21832

Klimecki, O. M., Leiberg, S., Lamm, C., & Singer, T. (2012). Functional neural plasticity and associated changes in positive affect after compassion training. *Cerebral Cortex*, *23*(7), 1552–1561. https://doi.org/10.1093/cercor/bhs142

Klimecki, O., & Singer, T. (2012). Empathic distress fatigue rather than compassion fatigue? Integrating findings from empathy research in psychology and social neuroscience. In B. Oakley, A. Knafo, G. Madhavan, & D. S. Wilson (Eds.), *Pathological altruism* (pp. 368–383). New York: Oxford University Press.

Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress*, *19*(3), 192–207. https://doi.org/10.1080/02678370500297720

Lau, M. A., Bishop, S. R., Segal, Z. V., Buis, T., Anderson, N. D., Carlson, L., … Carmody, J. (2006). The Toronto Mindfulness Scale: Development and validation. *Journal of Clinical Psychology*, *62*(12), 1445–1467. https://doi.org/10.1002/jclp.20326

Leiter, M. P., & Schaufeli, W. B. (1996). Consistency of the burnout construct across occupations. *Anxiety, Stress, and Coping*, *9*(3), 229–243.

Luken, M., & Sammons, A. (2016). Systematic review of mindfulness practice for reducing job burnout. *American Journal of Occupational Therapy*, *70*(2), 7002250020p1–7002250020p10. https://doi.org/10.5014/ajot.2016.016956

Maslach, C., & Jackson, S. (1986). *MBI: Maslach Burnout Inventory, manual research edition*. Palo Alto, CA: University of California.

McHolm, F. (2006). Rx for compassion fatigue. *Journal of Christian Nursing*, *23*, 12–19.

Montero-Marin, J., Tops, M., Manzanera, R., Demarzo, M. M. P., de Mon, M. Á., & García-Campayo, J. (2015). Mindfulness, resilience, and burnout subtypes in primary care physicians: The possible mediating role of positive and negative affect. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.01895

Montero-Marin, J., Zubiaga, F., Cereceda, M., Demarzo, M. M. P., Trenc, P., & Garcia-Campayo, J. (2016). Burnout subtypes and absence of self-compassion in primary healthcare professionals: A cross-sectional study. *PLoS One*, *11*(6), e0157499. https://doi.org/10.1371/journal.pone.0157499

Myhren, H., Ekeberg, Ø., & Stokland, O. (2013). Job satisfaction and burnout among intensive care unit nurses and

physicians. *Critical Care Research and Practice*, *2013*, 1–6. https://doi.org/10.1155/2013/786176

Neff, K. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*, 85–101. https://doi.org/10.1080/15298860390129863

Neff, K. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223–250. https://doi.org/10.1080/15298860390209035

Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology, 69*(1), 28–44. https://doi.org/10.1002/jclp.21923

Pfifferling, J. H., & Gilley, K. (2000). Overcoming compassion fatigue. *Family Practice Management*, 7(4), 39–39.

Pons, G. B. (2014). Cultivating healthy minds and open hearts: A mixed-method controlled study on the psychological and relational effects of Compassion Cultivation Training in Chile (Doctoral dissertation). Institute of Transpersonal Psychology, Palo Alto, CA.

Prado, A. (2016). Compassion cultivation training and its impact on mindfulness, empathy, and compassion satisfaction among social workers working with veterans (Doctoral dissertation). California State University, Stanislaus, Turlock, CA.

Raes, F., Pommier, E. A., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy, 18*, 250–255. https://doi.org/10.1002/cpp.702

Richings, J. C., Khara, G. S., & McDowell, M. (1986). Suicide in young doctors. *The British Journal of Psychiatry, 149*(4), 475–478.

Ringenbach, R. T. (2009). A comparison between counsellors who practice meditation and those who do not on compassion fatigue, compassion satisfaction, burnout and self-compassion (Doctoral dissertation). University of Akron, Akron, OH.

Roeser, R. W., Schonert-Reichl, K. A., Jha, A., Cullen, M., Wallace, L., Wilensky, R., … Harrison, J. (2013). Mindfulness training and reductions in teacher stress and burnout: Results from two randomized, waitlist-control field trials. *Journal of Educational Psychology, 105*(3), 787. https://doi.org/10.1037/a0032093

Schaufeli, W. B., & Greenglass, E. R. (2001). Introduction to special issue on burnout and health. *Psychology & Health*, 16(5), 501–510. https://doi.org/10.1080/08870440108405523

Seppälä, E. M., Hutcherson, C. A., Nguyen, D. T., Doty, J. R., & Gross, J. J. (2014). Loving-kindness meditation: A tool to improve healthcare provider compassion, resilience, and patient care. *Journal of Compassionate Health Care, 1*(5). https://doi.org/10.1186/s40639-014-0005-9

Shanafelt, T. D., Boone, S., Tan, L., Dyrbye, L. N., Sotile, W., Satele, D., … Oreskovich, M. R. (2012). Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Archives of Internal Medicine, 172*(18), 1377–1385. https://doi.org/10.1001/archinternmed.2012.3199

Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching self-care to caregivers: Effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology, 1*(2), 105. https://doi.org/10.1037/1931-3918.1.2.105

Siu, O. L., Cooper, C. L., & Phillips, D. R. (2014). Intervention studies on enhancing work well-being, reducing burnout, and improving recovery experiences among Hong Kong health care workers and teachers. *International Journal of Stress Management, 21*(1), 69. https://doi.org/10.1037/a0033291

Stickle, M. (2016). The expression of compassion in social work practice. *Journal of Religion & Spirituality in Social Work: Social Thought, 35*(1–2), 120–131. https://doi.org/10.1080/15426432.2015.1067587

Thompson, E. R., & Phua, F. T. (2012). A brief index of affective job satisfaction. *Group & Organization Management, 37*(3), 275–307. https://doi.org/10.1177/1059601111434201

Tyssen, R., Vaglum, P., Gronvold, N. T., & Ekeberg, O. (2001). Suicidal ideation among medical students and young physicians: A nationwide and prospective study of prevalence and predictors. *Journal of Affective Disorders, 64*, 69–79.

Van Dam, N. T., Sheppard, S. C., Forsyth, J. P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders, 25*(1), 123–130. https://doi.org/10.1016/j.janxdis.2010.08.011