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Intensive Residential Treatment Program: Efficacy for Emergency Responders' Critical Incident Stress

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Abstract
Little research exists to determine the efficacy of residential treatment for first responders. In this article, data from a residential retreat were used to examine factors leading to symptom reduction in emergency responders suffering from critical incident stress and post-traumatic stress injury (PTSI). Data were analyzed using multivariate analyses of variance and a 2×2 mixed factorial design. A repeated measure design, the Symptom Assessment for Emergency Responders (SAFER) questionnaire, consisting of 18 clinical and three validity scales, was assessed and analyzed through causal-comparative data. The participant group consisted of 122 emergency responders attending the West Coast Post-trauma Retreat (WCPR) during 2017. The waitlist group consisted of 20 emergency responders. Retreat clients were asked to complete the SAFER questionnaire on the first and last days of the retreat, as did the waitlist participants. Comparisons were then made between the scores of those attending the retreat and those on the waitlist. The results from the SAFER questionnaire indicated a significant pre-post-test decrease in many of the measured symptoms for the retreat participants, as compared with that of the waitlist participants.

Keywords Emergency responder · PTSD · PTSI · Critical incident stress · Coping · Trauma · Law enforcement · Police officer · Firefighter · Paramedic · Dispatcher

Emergency responders, law enforcement officers, firefighters, emergency medical technicians, paramedics, and 911 dispatchers experience work-related stress on a regular basis. At times, these experiences lead to adverse health consequences and the inability to cope with daily life stressors. Soomro and Yanos (2019) recruited 308 active-duty police officers via an online survey and found that 12% provided evidence that they currently suffer from posttraumatic stress disorder (PTSD). They also found that 33% had been seriously injured and 75% stated that they had seen someone else die in the line of duty. Thirty-one percent stated that they had been shot at and 51.5% said that they had been threatened with a gun.

Police officers and their families are also exposed to high levels of stress (Donnelly et al. 2015; Mora et al. 2011) including interpersonal conflicts with colleagues and/or superiors, excessive workload, shift work, sleep deprivation, negative public interactions, and repeated exposure to traumatic events (Maran et al. 2014; Mora et al. 2011). As a result, they are at risk for depression, anxiety, acute stress disorder, mood disorders, PTSD, marital problems, and substance abuse. Suicide is a significant problem in this population, although a recent meta-analysis study of 44 articles indicated mixed results (Violanti et al. 2018). Problems collecting suicide data include comparing groups of emergency responders with the same demographically controlled groups of citizens to the failure of departments to provide accurate information. More law enforcement officers and fire fighters die from suicide than are killed on duty (Chae and Boyle 2013; Heyman et al. 2018). For example, in 2017, there were 103 reported firefighter suicides compared with 93 line-of-duty (LOD) deaths and 140 police suicides compared with 129 LOD deaths. Patterson et al. (2012) demonstrated that police officers who struggle with stress often turn to maladaptive behaviors such as aloofness, authoritarianism, cynicism, depersonalization, emotional detachment, suspiciousness, and excessive use of alcohol.

First Responders are reluctant to seek mental health assistance due to a lack of trust, fears about confidentiality, and concerns that they will not be understood by anyone outside of

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the emergency responder culture (Kirschman et al. 2013). The purpose of this study was to determine the effectiveness of the West Coast Post-trauma Retreat to help emergency responders cope with the stressors of their job. Use of the symptom assessment for emergency responders (SAFER) questionnaire to assess client progress will also be discussed.

Methods

Participants

The "Retreat" group for this study consisted of 122 emergency responders who attended all 6 days at West Coast Post-trauma Retreat (WCPR) during 2017. Permission was obtained from the participants to allow their answers to be used for research. Data were collapsed and confidentiality was maintained. No substantial changes were made to the WCPR program during this time, although the volunteer clinicians, peers, and chaplains changed.

Measures

Each client at WCPR had taken the SAFER questionnaire prior to attending the retreat, on the first day of the retreat, and at the end of the retreat. The results on the self-reported questionnaire were compared with each other to help determine what impact, if any, WCPR had on the client. The SAFER questionnaire has five questions on demographics, 16 validity questions, and 97 clinical questions. The clinical scales on the SAFER questionnaire measure administrative betrayal, anger/hostility, alterations in arousal and reactivity, avoidance, intrusive thoughts/re-experiencing, negative alterations in cognition and mood, depression, exhaustion, generalized anxiety disorder, impairment, obsessive-compulsive symptoms, panic attack, sexual concerns, somatic symptoms, substance abuse, suicidality, and maladaptive tension reduction behavior. Two summary scales measure emergency responder exhaustion syndrome and posttraumatic stress injury. The validity scales measure positive bias, validity, and atypical response. The SAFER questionnaire was designed using a Likert scale for measuring the responses. The individual taking the SAFER questionnaire had an option of answering 1-not at all/never, 2-sometimes, 3-most of the time, or 4-all the time, for all the questions.

Reliability

The symptom assessment for emergency responders (SAFER) is a self-report questionnaire designed to determined current levels of distress. It was normed on 500 emergency responders from a randomized volunteer sample. A regression analysis using the STATA software was used to test the reliability and validity factors. The SAFER questionnaire started with 216 questions. Through regression analyses, the variance each question contributed to the scales was analyzed. Those questions that contributed little were dropped. Questions were developed based upon the primary author's twenty-year experience of working with emergency responders in the mental health field.

The SAFER questionnaire corresponds closely to the DSM-5 criteria for mental health diagnoses. Questions are based on each element of the DSM-5 criteria for PTSD, depression, generalized anxiety disorder, and obsessive-compulsive symptoms. The other questions referred to critical incident and organizational stress that also affect emergency responders. The shortened 113 question SAFER questionnaire was administered to 100 random volunteer emergency responders. Simultaneously, they completed the Trauma Symptom Inventory-II and the Symptom Check List-90 Revised. Correlations ranged from 0.78 to 0.89. Thus, SAFER reliability assessed symptoms measured except for the Administrative Betrayal scale as no corresponding measurement could be found in the literature. Some questions on the SAFER are unique so no correlational analyses could be conducted.

Validity

Through theoretical analysis, the questions were divided into various categories. Frequencies to answers were based from the initial 500 respondents. *T* Scores were then developed. Items that did not significantly contribute to the individual scale, based on the F ratio, and the amount of variance that each item contributed to the clinical concept, were deleted. STATA was used and a specific program, MPLUS, provided the needed data analysis. The initial statistical analyses were conducted through Qualtrics™ and later exported to STATA.

The initial analysis of the 500 responders to SAFER included a cluster analysis with orthogonal rotation. It revealed a 5-factor solution that did not reveal any logical concepts. As a result, items were sorted into scales using DSM-5 criteria and resulted in the clinical scales that were examined. The questions for validity scales were developed from the answers and distribution frequency for the initial 216 questions forming the atypical response scale and the other rarely endorsed validity questions were retained. In comparing SAFER with the TSI-2 and SCL-90-R, the Pearson coefficient correlational analysis (r^2) was used.

Procedure

The West Coast Post-trauma Retreat (WCPR) is a six-day residential program staffed by volunteers, including mental health clinicians, peers (current or former first responders

who typically have attended the retreat themselves), and chaplains, all of whom are trained in trauma recovery and have experience working with emergency responders. Clinicians consist of licensed psychologists, clinical social workers, marriage and family therapists, and professional counselors. Interns and students in training also assist in the retreats. The mission of the organization is to build clients' resiliency, improve their quality of life, and reduce symptoms associated with traumatic stress (Kamena and Fay 2007) utilizing an integrative, psychosocial, evidence-based treatments that include psycho-education, group, individual, and milieu therapies plus peer support and eye movement desensitization and reprocessing (EMDR). Clients are clinically interviewed before acceptance to the program and must be a current or former emergency responder, have an identified critical incident that is currently distressing, be able to tolerate a group setting, and avoid alcohol and other substances for 30 days prior to the retreat. Each session has a maximum of six clients and a staff to client ratio that exceeds two to one.

Daily psychoeducational presentations include information and interactive exercises on the following topics: symptoms, forgiveness, the psychophysiology of stress, rescue personalities, the emergency responder exhaustion syndrome (Fay et al. 2006), and the impact of stress on relationships and families. On the first day, introductions are made by all staff members and retreat policies and procedures are reviewed, including confidentiality. Administration of the SAFER occurs followed by individual meetings with clinicians to install anxiety reducing tools and introduce EMDR. Client-to-client interviews are used to review presenting symptoms and to introduce clients to the group.

Each morning of the retreat consists of meditation exercises that we call the enhancement of internal situational awareness. The second day includes educational presentations and phase one of the extended exposure debriefing (the facts of the incident). Day three also includes educational presentations along with phase two of the extended exposure debriefing (thoughts about the incident). The fourth day continues with educational presentations and phase three of the extended exposure debriefing (somatic and emotional reactions), followed by a presentation on addictions and a first responder 12-step meeting. The schedule for day five consists of educational presentations and interactive exercises focusing on significant family or personal relationships that have impacted the clients' reactions to their critical incident. Individual EMDR sessions focusing on the critical incident are conducted by six clinicians. This is followed by clients' creation of a 90-day action plan, a letter writing exercise (clients write to themselves and will open the letter in 90 days), post-testing, and completion of an evaluation form. The final day consists of re-administration of the SAFER, clients meeting by themselves to debrief the week, the graduation ceremony, and a closing ritual. This ritual involves two rocks upon which each client has written something representing their critical incident (dates, names, and emotions). Clients are invited to place one or both rocks on a pile left by previous clients or, if they are not ready, are invited to return at a future date.

Results

The ethnicity of the 122 responders in the experimental (retreat) group consisted of 77.9% Caucasian, 9.8% Hispanic, 4.9% other, 2.5% Native American, 2.5% Native Hawaiian, 1.6% Black or African-American, and 0.8% Asian. Their ages ranged from 18 to 25 (0.8%), 26–45 (41.8%), 46–65 (1.6%), and 55.7% being over 65. Seventy seven percent were male, 22.1% were female, and 0.8% were transgendered. Their occupations included 50% law enforcers, 36.1% fire service, 5.7% paramedics/EMS, 4.1% dispatchers, 3.3% correctional officers, and 0.8% nurses. And, their time on the job varied from 46% serving over 20 years, to 24% who had served 16–20 years, 20% had 11–15 years, 9% worked 6–10 years, and 0.8% had 0–5 years (Table 1).

The waitlist or control group for 20 responders' ethnicity: 80% Caucasian, 15% Hispanic, and 5% other; age: 26–45 (65%), 46–65 (35%); gender: 70% male, 30% female; occupation: 45% law enforcers, 35% firefighters, 10% other, 5% correctional officers, and 5% paramedics/EMS; and, time on the job: 35% over 20 years, 30% 16–20 years, 25% 6–10 years, 5% 11–15 years, and 5% with 0–5 years.

There were no statistically significant differences between the control and experimental groups, although the experiemental group was slightly older than the control group.

It was hypothesized that a group residential treatment program provides benefits to emergency responders by reducing the symptoms of critical incident stress from work-related traumas. The three research questions posed were:

1. What are the perceived benefits of WCPR in the treatment of emergency responders?
2. How does WCPR impact the symptoms of overall stress in emergency responders?
3. How does WCPR affect those emergency responders with post-traumatic stress symptoms?

Data from WCPR during 2017 were analyzed using a 2×2 mixed factorial design. The between factor was the retreat and waitlist groups, and the within factor was the pretest-posttest sessions. A repeated measure design using the SAFER questionnaire was assessed and analyzed through causal-comparative data. The clients that attended the retreat at WCPR were asked to complete the SAFER questionnaire on the first day of the retreat, pre-test, and again at the end of the retreat, post-test. Paralleling the schedule of the clients attending the retreat, the waitlist participants simultaneously

Table 1 Demographic data

Gender	Treatment/Experimental 122 participants	Waitlist/Control 20 participants
Male	77%	70%
Female	22.1%	30%
Transgender	0.8%	
Race	Treatment/Experimental	Waitlist/Control
Caucasian	77.9%	80%
Hispanic	9.8%	15%
Native American	2.5%	
Native Hawaiian	2.5%	
African American/Black	1.6%	
Asian	0.8%	
Other	4.9%	5%
Age range	Treatment/Experimental	Waitlist/Control
18–25	0.8%	
26–45	41.8%	65%
46–65	1.6%	35%
Over 65	55.7%	
Occupation	Treatment/Experimental	Waitlist/Control
Law enforcement	50%	45%
Firefighter	36.1%	35%
Paramedic/EMT	5.7%	5%
Dispatcher	4.1%	
Correctional officers	3.3%	5%
Nurses	0.8%	
Other		10%
Years of service	Treatment/Experimental	Waitlist/Control
0–5	0.8%	5%
6–10	9%	25%
11–15	20%	5%
16–20	24%	30%
Over 20	46%	35%

completed the SAFER questionnaire. Comparisons were then made between the scores of those attending the retreat and those on the waitlist.

This study utilized 2×2 multivariate analyses of variance (MANOVAs) followed by univariate tests to determine whether WCPR had positive results in reducing emergency responders' critical incident stress and other presenting mental health issues. All statistical analyses were performed using the SPSS program; one MANOVA was performed on the items compromising each of the SAFER scales. The study used a 2×2 mixed factorial design so that the significance of the differences in pre-post scores for the two groups could be assessed. Positive results of the WCPR were reflected in significantly greater pre-test/post-test reductions in the critical incident stress levels of the emergency responders attending the retreat, as compared with those of the emergency responders on the waitlist. These were revealed by the presence of significant pre-post group interactions. The pre-post group test refers to the test for significance of the "pre-post x group" interaction.

The data from the SAFER questionnaire indicated that emergency responders who attended WCPR self-reported significant decreases in a variety of their symptoms at the end of the retreat. The benefits of the retreat indicated that symptoms related to anger/hostility, alterations in arousal and reactivity, avoidance, intrusive symptoms, negative alterations in cognitions and mood, depression, exhaustion, generalized anxiety, impairment, obsessive-compulsive symptoms, symptoms related to panic attacks, somatic symptoms, and suicidal thoughts, were all significantly decreased from when the participants started the retreat. Arce (2018) indicated that in the long run, critical incident stress debriefings help manage stress in emergency responders. However, due to the inordinate number of trauma-related incidents to which emergency responders are exposed, longer-term psychological treatment would likely be most beneficial in helping emergency responders maintain health. This long-term treatment could include critical incident stress debriefings on an individual basis or in a group or residential treatment setting. Arce (2018) also indicated that allowing emergency responders the opportunity to express their personal feelings helps them normalize the experience, thus helping them feel safe and stable.

The results from the SAFER questionnaire indicated a sizable pre-post-test decrease in many of the measured symptoms for the retreat participants, as compared with that of the waitlist participants, over the six-day period. The importance of this comparison is reflected by the significance of the pre-post group test interaction as determined by the univariate tests, which are analyses of a single variable to determine patterns in the data, for each question. For the multivariate pre-post group interaction, refer to the Table 2 for the results of Wilks' Lambda for each clinical scale.

As can be seen, clinically significant results were obtained in reduction of symptoms in a number of categories. Thus, regarding the first research question, "What are the perceived benefits of WCPR in the treatment of emergency responders?" we found that attendees felt an increased overall well-being resulting from significant reduction in their symptoms. Many have stated that the program literally saved their lives, that had they not benefitted they had planned to return home and commit suicide. Question two asked, "How does WCPR impact the symptoms of overall stress in emergency responders?" The results indicate that WCPR significantly reduces symptom in all categories except for those that ask about past behaviors, not current ones. Lastly, research question three asked, "How does WCPR affect those emergency responders with post-traumatic stress symptoms?" The answer may be seen in the Summary Scale, "Posttraumatic Stress Injury," in which the results showed clinically significant reduction of symptoms at a very high level of certainty ($p < .001$).

Table 2 Wilks' Lambda results clinical scales

Pre-Post	Wilks' Lambda	*F* statistic	Significance
Anger/Hostility	.795	(7134) = 4.929	< .001
Hyperarousal	.586	(9132) = 10.354	< .001
Avoidance	.669	(5136) = 13.439	< .001
Isolation	.757	(7134) = 6.159	< .001
Negative alterations in cognitions and mood	.665	(14,127) = 4.561	< .001
DEPRESSION	.612	(15,126) = 5.316	< .001
Exhaustion	.718	(4137) = 13.450	< .001
Anxiety	.790	(3138) = 12.224	< .001
Impairment	.736	(5136) = 9.732	< .001
Obsessive-compulsive traits	.854	(3138) = 7.896	< .001
Panic attacks	.698	(12,129) = 4.655	< .001
Somatization	.834	(7134) = 3.799	< .001
Suicidal ideation	.832	(8133) = 3.349	< .002
Sexual concerns	.923	(6135) = 1.877	< .007
Maladaptive tension reduction behaviors	.996	(2139) = 0.261	< .770 (NS)
Betrayal	.993	(3138) = 3.23	< .809 (NS)
Substance abuse	.995	(4137) = 0.185	< .946 (NS)
Summary scales			
ERES	.535	(26,115) = 3.844	< .001
PTSI	.452	(35,106) = 3.670	< .001

Discussion

WCPR is a residential treatment program that addresses the symptoms experienced by emergency responders (for additional program information, see www.FRSN.org; see also Kirschman et al. 2013). It utilizes an integrative treatment approach based on a psychosocial model, with the goal of restoring the individual to a healthy equilibrium commensurate with their pre-incident level of functioning.

The WCPR program and others like it have great value as clinical resources to assist emergency responders in need. The treatment model also offers support and clinical direction for spouses and significant others (SOS). SOS is a six-day residential treatment program that focuses on the difficulties of family life that attendees experience. Symptoms of depression, anxiety, abuse, domestic violence, co-dependence, and vicarious and secondary traumatization are common. Unfortunately, there is currently a three-year waitlist. Additional programs are needed to fill this demand.

Addressing the stressors and traumatic exposure of these responders is critical in building more effective individual and team members who would serve as role models for their peers. Emergency responder peers play a critical role in the WCPR program. They share their experiences and demonstrate how they have been able to recover. They serve as trusted role models to the clients and engender hope in the clients that they too may conquer their demons. Lead peers present several of the educational pieces throughout the week and often facilitate discussion of the clients' critical incidents. This may be helpful for overcoming negative cognitions (e.g., magical thinking) by deconstructing the incident from an operational perspective and validating the client's techniques. Many of the peers were former clients. They return to "pay it forward" and continue their personal recovery. Clients build trust and confidence in the peers because they share similar stories, grief, complications, distrusts, and experiences many non-responders may not fully understand. Being a peer is a very different experience in the healing process, allowing the individual to not only continue processing their own symptoms and critical incident(s), but also helping other emergency responders on their journey. Many peers have been involved with WCPR since its first years of operation beginning in 2001.

The efficacy of WCPR is reflected by reducing levels of negative emotional and physical states, as mentioned by the SAFER questionnaire. For all the items that revealed significance of the pre-post group interactions found in this study, there was a decrease in pre-post test scores for the retreat group, but not for the waitlist group. The SAFER questions were designed using a Likert scale for measuring the responses. The results indicated that WCPR contributed to lowering participant's post-traumatic stress symptoms, as well as helping reduce their overall symptoms of stress. Of the 113 questions on the SAFER, 74 were found to have a statistically significant interaction while 39 did not. Of those 39 questions, 16 were used to assess the validity of the SAFER; therefore,

they were excluded from the overall analysis. For the remaining 23 questions that did not indicate statistically significant interactions, the retreat group still showed a larger decrease in symptoms than the waitlist group. Questions asking specifically about attendees' past would obviously not change.

This research did not examine the differences between genders, races, ethnicity, sexual orientation, or age. Although the SAFER questionnaire captures many stressors pertinent to emergency responders, it does not address discrimination or harassment experienced by females, transgendered persons, or minorities (a revision of the questionnaire, SAFER-R, is in progress that does include these items). The responses to the SAFER questionnaire are based on self-report leading to potential for bias by not including a structured clinical interview. Also, the same critical incident may be perceived and rated differently by each individual that was present because we have found that the amount of perceived stress is proportionate to the degree to which the incident is personalized. Future research would benefit from the use of longitudinal designs to gain a clearer understanding of the participants' perception of stressors over time and factors associated with that change.

Conclusion

The SAFER questionnaire is one of the several assessment tools utilized throughout the retreat in helping to determine specific symptoms from which each client is suffering. Prior to arriving at WCPR, an extensive clinical intake history for each client is conducted. While at the retreat, clients engage in a more extensive evaluation using a personal history questionnaire and they participate in different group and individual sessions, allowing for discussions on their critical incident(s) or other factors that may be contributing to their symptoms of distress. Clinicians work closely with clients' personal counselor/therapist/psychiatrist, if the client so chooses. Aftercare programs are made available, including weekly meetings held outside of the facilities, a designated peer-supporter, and a contact list that is provided for each session of all of the staff members present.

The program includes intensive treatment or "debriefing" in a group setting staffed by culturally competent clinicians, peers, and a chaplain. Future research should focus on the individual components of the treatments offered. The components include such things as picking up clients from the airport, group introductions, ice-breakers, individual and group sessions, bonding among clients, educational discussions, and a focus on their family of origin in how that might have impacted their reactions to their critical incidents.

A contributing factor to WCPR's success has been their utilization of an integrative psychosocial model, with the goal of restoring the client to a healthy equilibrium commensurate with their pre-incident level of functioning. They also attend an alcoholics anonymous (AA) meeting on site, have the ability to continue to attend first responder AA meetings in their community (or to start one) and need not have a substance abuse problem to attend. Clients can also choose whether they would like to participate in non-denominational support with the chaplain.

This research demonstrated the efficacy of West Coast Post-trauma Retreat (WCPR). It has proven to significantly reduce a variety of stress-related symptoms including the risk of suicide.

Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (First Responder Support Network, Institutional Review Board, reference # 1) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study. Mark Kamena, PhD, ABPP.

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