Preparing Soldiers to Manage Acute Stress in Combat: Acceptability, Knowledge and Attitudes

Amy B. Adler and Ian A. Gutierrez

Objectives: iCOVER training is designed to prepare individuals in high-risk occupations to manage acute stress reactions in team members. Building on an initial pilot study, the present study evaluated iCOVER with soldiers just prior to their deployment to combat, documenting their feedback and changes in knowledge and attitudes.

Methods: National guardsmen received a 1-hr training in iCOVER in the weeks prior to deploying to Iraq and Afghanistan. Surveys were administered before iCOVER training (i.e., “pre-training”) and immediately afterward (i.e., “post-training”). In all, 129 of 146 (88.4%) soldiers consented to participate in the evaluation, and all consenting soldiers completed both surveys.

Results: Participants rated iCOVER highly in terms of usefulness, relevance, and importance. Knowledge scores improved significantly from pre-training to post-training. In terms of attitudes, participants were more confident in their ability to handle an acute stress reaction, were more confident in their unit’s ability to handle an acute stress reaction, were more likely to report their leaders emphasized the need to address acute stress, and were less likely to report stigma related to acute stress from pre-training to post-training.

Conclusions: iCOVER training offers high-risk teams an opportunity to prepare for encountering acute stress in team members, strengthening the ability of teams to provide support to one another and respond effectively.

Amy B. Adler, PhD is a senior scientist with the Center for Military Psychiatry and Neuroscience at the Walter Reed Army Institute of Research. She has published more than 150 articles and edited 7 books. Her current research focuses on resilience in small teams, behavioral health leadership, and rapid interventions to reduce acute stress. Ian A. Gutierrez, PhD, is a civilian research psychologist with the Center for Military Psychiatry and Neuroscience at the Walter Reed Army Institute of Research. He has published more than 20 peer-reviewed articles in the areas of behavioral health, resilience, stress, and religion and spirituality.

Address correspondence to Amy B. Adler, Center for Military Psychiatry and Neuroscience, Walter Reed Army Institute of Research, 503 Robert Grant Ave., Silver Spring, MD, USA. E-mail: amy.b.adler.civ@mail.mil

This work was authored as part of the Contributor’s official duties as an Employee of the United States Government and is therefore a work of the United States Government. In accordance with 17 U.S.C. 105, no copyright protection is available for such works under U.S. Law.

This is an Open Access article that has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights (https://creativecommons.org/publicdomain/mark/1.0/). You can copy, modify, distribute and perform the work, even for commercial purposes, all without asking permission.
Individuals operating in high-stress occupations may experience an acute stress reaction (ASR) or transient intense autonomic symptoms of anxiety and cognitive disruption that result in the individual’s inability to function during or immediately following a potentially traumatic event (World Health Organization, 2018). In high-stress occupations like policing, firefighting, and the military, individuals who are unable to function as a result of an ASR may endanger themselves and their team members. Experiencing an ASR may also place individuals at greater risk for developing an acute stress disorder or posttraumatic stress disorder (PTSD; e.g., Solomon et al., 2005, 1987; Zohar et al., 2009), although research has not established this link empirically. In contrast to ASRs, acute stress disorder is defined by clinical symptoms that are present 3–30 days after exposure to a traumatic event, and PTSD is defined by clinical symptoms that last more than 30 days following exposure to a traumatic event (American Psychiatric Association, 2013). Although reliable estimates of the incidence of ASRs have not been established, surveys have found that more than 40% of soldiers reported witnessing acute stress in unit members during combat (Adler, Svetlitzky et al., 2020).

In light of the prevalence of encountering acute stress in team members and the risks posed by ASR to units, a peer-based intervention was developed to help individuals rapidly manage acute stress in team members. This intervention, YaHaLOM, was developed by the Israel Defense Forces (Svetlitzky, Farchi, Ben Yehuda, Adler et al., 2020) and then adapted into iCOVER by the U.S. Army. A cross-sectional survey with Israeli soldiers found that soldiers reporting they had received YaHaLOM also reported more knowledge of acute stress, greater confidence in managing acute stress, and fewer stigma-related concerns about acute stress than soldiers reporting they had not received training (Svetlitzky, Farchi, Ben Yehuda, Start et al., 2020). These results suggest that training may be effective in preparing individuals to address an ASR in team members but were limited by the cross-sectional nature of the study, reliance on self-reported training status, and lack of assurance that training was conducted to standard. Findings are also complemented by a small group randomized trial that piloted iCOVER training with 44 U.S. soldiers and Marines. This pilot study found that participants rated the training highly, increased their knowledge regarding acute stress from before to after training, and were able to execute the iCOVER steps during realistic training scenarios relative to those in the control condition (Adler, Start et al., 2020). While these pilot findings offered support for the acceptability and utility of iCOVER, they were limited to small numbers of service members in a training environment.

Given the Israeli (Svetlitzky, Farchi, Ben Yehuda, Start et al., 2020) and U.-S. studies (Adler, Start et al., 2020), questions remained regarding the degree to which service members about to deploy to combat would find the training acceptable and the degree to which the training might influence attitudes toward acute stress, including confidence in the ability of individuals, teams, and leaders to manage acute stress in others. Thus, the goals of the present study were to replicate and extend previous findings by training a large number of soldiers in iCOVER who were about to deploy to combat. Adapting the Knowledge-Attitudes-Practice model for assessing health education (see, Wan et al., 2016, for a review), the study goals were to (1) assess training acceptability during the pre-deployment period, (2) replicate previous findings regarding increases in knowledge following iCOVER training, and (3) examine changes in attitude following iCOVER training. This focus on attitudes included personal confidence in managing ASRs, confidence in unit management of ASRs, leadership emphasis on addressing ASRs, and stigma related to ASRs. By assessing iCOVER training in this real-world, pre-
deployment context, results were intended to inform future implementation.

METHODS

This study was approved by the Human Subjects Protection Branch at the Walter Reed Army Institute of Research.

Study Design

The study used a pre-post design to assess changes before and after iCOVER training. The study sample was from a National Guard unit about to deploy to Iraq and Afghanistan.

Measures

Demographics

Background questions included age, rank, and previous combat deployment experience.

Acceptability

Training acceptability was assessed at post-training with 10 items that addressed the degree to which iCOVER was useful, relevant, important, and made them a better team member. Items were adapted from previous training evaluation studies (e.g., Adler, Start et al., 2020). Items were rated on a 5-point scale (1 = strongly disagree to 5 = strongly agree).

Knowledge

Knowledge about ASRs and acute stress intervention was assessed with six multiple choice questions before and after training. Items were adapted from Adler et al. (2020) and addressed acute stress symptoms and appropriate steps for intervening if a unit member exhibits acute stress. The number of correct answers was then summed to create a knowledge score.

Attitudes

Attitudes related to acute stress were measured with 14 items at pre-training and post-training. Items are assessed in four categories: (1) personal confidence in managing ASRs (2 items); (2) confidence in unit management of ASRs (3 items); (3) leadership emphasis on addressing ASRs (5 items); and (4) stigma related to ASRs (4 items). Items were developed for this study and rated on a 5-point scale (1 = strongly disagree to 5 = strongly agree).

iCOVER Training

Soldiers received 60 minutes of iCOVER training. Training covered the 6-step iCOVER procedure following the iCOVER acronym: (1) The “i” refers to identifying ASRs in teammates during a potentially traumatic event; (2) “C” refers to connecting with the individual experiencing an ASR through voice, eye contact and touch; (3) “O” refers to offering commitment to remain by the individual; (4) “V” refers to verifying facts in order to prompt the individual to respond to a simple question that required little cognitive processing; (5) “E” refers to establishing the order of events around the ASR, including what just happened, what is happening and what will happen, to ground the individual in the moment; and (6) “R” refers to requesting action that prompts the individual to engage in purposeful activity. Training consisted of a presentation using PowerPoint slides, short video clips, demonstration and practice in small groups.

Procedure

In the weeks prior to a 9–12 month combat deployment, units began pre-deployment preparations in a remote area in the U.S. southwest. Leaders and soldiers were briefed on the study and consented separately to reduce undue influence. Leaders and
soldiers were then brought together again, and all participants completed a pre-training survey, received the iCOVER module, and then completed a post-training survey. All activities occurred in a large tent or classroom.

The iCOVER trainers were two retired noncommissioned officers with previous experience in training iCOVER; the trainers had previously deployed to combat themselves. Trainers followed the detailed trainer notes in the PowerPoint slides and training fidelity checks demonstrated delivery consistent with these notes. Study staff observed each training session and found that 100% of the training steps were covered.

Data Analysis

Frequencies were reported for acceptability ratings, knowledge scores, and attitude items. Responses for acceptability and attitude items were dichotomized into item agreement (i.e., “agree” or “strongly agree”) versus item non-agreement (i.e., “strongly disagree,” “disagree,” or “neither agree nor disagree”) for categorical analysis. Categorical pre-post comparisons for acceptability ratings, knowledge scores, and attitudes items were conducted using McNemar’s chi-square analysis (Agresti, 1990). Pre-post comparison in total group-wise knowledge scores was assessed with a paired t-test. Analyses were conducted in R v. 4.1.0 (R Core Team, 2021).

RESULTS

Participant Characteristics

Of the 146 soldiers briefed on the study, 129 (88.4%) provided consent. All of these soldiers completed the pre-training and post-training surveys. In terms of rank, 54.8% (n = 69) were junior-enlisted, 38.9% (n = 49) were noncommissioned officers, and 6.3% (n = 8) were officers or warrant officers. Regarding age, 43.8% (n = 56) were 17–24 years of age, 29.7% (n = 38) were 25–29 years of age, and the remaining 26.6% (n = 34) were 30 years of age or older. The vast majority of soldiers were male; only 1.6% (n = 2) were female. In terms of previous combat experience, 30.2% (n = 39) reported previously deploying to combat.

Acceptability Ratings

Acceptability ratings are presented in Table 1. More than 9 in 10 soldiers agreed that the iCOVER procedure was clear, that iCOVER was useful, relevant, and important, and that iCOVER taught them how to help

| Item                                                                 | N Agree | % Agree |
|----------------------------------------------------------------------|---------|---------|
| The training taught me how to help a Buddy who is having difficulty functioning because of mental stress | 121\129 | 93.8%   |
| The training was useful                                              | 121\129 | 93.8%   |
| The training was relevant                                             | 120\129 | 93.0%   |
| The training was important                                            | 120\129 | 93.0%   |
| The video was helpful                                                 | 119\129 | 92.2%   |
| The iCOVER procedure is clear                                         | 118\128 | 92.2%   |
| I would recommend this training to the other Service members          | 111\128 | 86.7%   |
| The skills I learned in this training will help me be a better team member | 110\129 | 85.3%   |
| I wish I had this training earlier in my military career              | 95\128  | 74.2%   |
| The training helped bring the squad closer together                    | 64\129  | 49.6%   |

Note. Items listed in order from greatest agreement to least agreement.
| Item                                                                 | Pre-Training                      | Post-Training                      | % Change | X²(1)  | p     |
|----------------------------------------------------------------------|-----------------------------------|-----------------------------------|----------|--------|-------|
| **Personal Confidence in Managing ASRs**                             |                                   |                                   |          |        |       |
| I am confident that I could help a buddy rapidly recover if they reacted this way. | 83/129 64.3%                      | 114/126 90.5%                     | 26.1%    | 27.68  | <.001 |
| If my buddy reacted this way there are things that I can do to help them recover quickly. | 100/129 77.5%                      | 119/125 95.2%                     | 17.7%    | 15.75  | <.001 |
| **Confidence in Unit Management of ASRs**                            |                                   |                                   |          |        |       |
| I am confident that my unit could help me recover if I reacted this way. | 72/129 55.8%                      | 101/126 80.2%                     | 24.3%    | 22.13  | <.001 |
| I am confident that my leader would know how to help a unit member rapidly recover if they reacted this way. | 82/129 63.6%                      | 107/126 84.9%                     | 21.4%    | 19.31  | <.001 |
| It is the unit's responsibility to help a Soldier who reacts this way. | 97/129 75.2%                      | 106/125 84.8%                     | 9.6%     | 5.88   | .015  |
| **Leadership Emphasis on Addressing ASRs**                          |                                   |                                   |          |        |       |
| My unit leadership talks about the importance of managing overwhelming mental stress during combat related events. | 58/129 45.0%                      | 75/126 59.5%                      | 14.6%    | 7.61   | .006  |
| My unit leadership asks us about our experiences with overwhelming mental stress. | 28/129 21.7%                      | 52/126 41.3%                      | 19.6%    | 18.89  | <.001 |
| My unit leadership acknowledges that overwhelming mental stress is a reality of combat. | 78/129 60.5%                      | 86/125 68.8%                      | 8.3%     | 2.7    | .100  |
| My unit leadership talks about their own experience with overwhelming mental stress in combat. | 53/129 41.1%                      | 62/126 49.2%                      | 8.1%     | 3.12   | .078  |
| My unit leadership emphasizes the importance of supporting one another in times of overwhelming mental stress. | 82/129 63.6%                      | 84/126 66.7%                      | 3.1%     | 0.3    | .584  |
| **Stigma Related to ASRs**                                           |                                   |                                   |          |        |       |
| Leaders might treat a Soldier who reacts this way differently.       | 50/127 39.4%                      | 53/126 42.1%                      | 2.7%     | 0.12   | .728  |
| Units would have less confidence in a Soldier who reacts this way.   | 54/129 41.9%                      | 40/125 32.0%                      | -9.9%    | 4.32   | .038  |
| This kind of reaction is understandable.                             | 84/129 65.1%                      | 108/126 85.7%                     | 20.6%    | 17.45  | <.001 |
| Soldiers who react this way would be seen as weak.                  | 13/129 10.1%                      | 18/126 14.3%                      | 4.2%     | 1.39   | .239  |
a team member with acute stress; more than 4 in 5 soldiers agreed that iCOVER made them a better team member and would recommend iCOVER to other soldiers, and about 3 in 4 soldiers wished they had received iCOVER earlier in their careers.

Knowledge

The mean change in knowledge scores from an average of 43.5% correct answers at pre-training ($M = 2.61$, $SD = 1.30$) to an average of 79.6% correct answers at post-training ($M = 4.78$, $SD = 1.08$) reflected a statistically significant improvement, $t (128) = 16.2$, $p < .001$.

Attitudes

Attitudes are reported in Table 2. Of the 14 attitude items, nine items showed significant increases in rates of agreement from pre-training to post-training, $X^2(1) ≥ 4.32$, $ps ≤ .038$. All items assessing personal confidence in managing ASRs and assessing confidence in unit management of ASRs significantly increased following training. Of the five items on leadership emphasis of addressing ASRs, two significantly increased. Finally, of the four stigma items, two significantly changed in the desired direction.

DISCUSSION

In the current study, almost every soldier preparing to deploy to combat rated iCOVER training as useful, relevant, important, and helpful in instructing them in how to intervene on behalf of a battle buddy experiencing acute stress. iCOVER training was also associated with an increase in ASR knowledge and more positive attitudes related to acute stress. These significant and meaningful effects highlight the importance of training soldiers in the management of ASRs.

Our findings further support the results of the iCOVER pilot conducted with squads in a training environment (Adler, Start et al., 2020). In both studies, soldiers rated iCOVER highly. The fact that the current study found high acceptability is important because it underscores the perceived value of iCOVER by soldiers about to deploy. With the myriad topics vying for the attention of deploying soldiers, findings demonstrate that handling acute stress was regarded as a compelling addition to pre-deployment preparation. Interestingly, comparatively fewer soldiers reported that they wish they had received iCOVER training earlier in their career, suggesting that providing iCOVER during the pre-deployment phase may be particularly well timed. Moreover, consistent with the initial pilot study, only about half of soldiers reported that iCOVER helped bring them closer together as a unit. Given that iCOVER training did not explicitly target unit cohesion, this lower rate of endorsement demonstrates the degree to which respondents considered each survey item carefully.

With respect to attitudes, iCOVER was associated with an increase in soldiers’ confidence in intervening on behalf of another soldier experiencing an ASR and an increase in confidence that other soldiers who had received iCOVER would be able to do the same. After receiving iCOVER, soldiers were also more likely to agree that their leaders emphasized ASRs and the importance of managing them. Although leaders did not have a designated role in the training per se, by ensuring time was set aside for the training, being present and participating, leaders may have heightened perceptions of the iCOVER material as relevant and may have helped convey the idea that helping one another manage acute stress was a unit priority.

Finally, iCOVER was associated with reduced concerns related to the stigma of ASRs. Specifically, significantly fewer participants were concerned that units would lose
confidence in soldiers who experience an ASR and more agreed that such a reaction was understandable. Such changes are important because they indicate how iCOVER may counteract doubts soldiers might harbor about what would happen if they could not function due to acute stress. Besides providing soldiers with a step-by-step procedure for addressing an ASR in team members, iCOVER may foster an organizational climate in which ASRs are regarded as normal, even expected, and concerns that would otherwise go unaddressed can be discussed more openly. The current study was limited by not having an active comparison condition and by not having a longitudinal follow-up. While the intent had been to follow these units after the deployment, this planned data collection was not feasible due to the COVID-19 pandemic. Future studies should address this gap and assess the impact of iCOVER on soldiers during and after a combat deployment. Future research should also examine whether a trainer’s own combat experience influences training acceptance, knowledge, and attitudes. In addition, future research should examine how leader engagement in the training may affect the perceived value of iCOVER and the confidence soldiers have in the ability of leaders to manage ASRs in the unit.

iCOVER implementation could also be further improved through case studies focused on understanding lessons learned regarding best practices for leveraging the iCOVER method. Previous case studies of the Israel Defense Forces’ implementation of the equivalent of iCOVER appear to illustrate its use and identify opportunities for adaptation, including providing the intervention to more than one person at a time (Svetlitzky, Farchi, Ben Yehuda, Adler et al., 2020). As iCOVER is implemented in the U.S. military, case studies could help identify parameters associated with the intervention and the ways in which it might need to be modified to suit particular units, occupational specialties, or anticipated combat environments. For example, during the start of the COVID-19 pandemic, behavioral health care experts at civilian hospitals requested that iCOVER be adapted for medical staff experiencing acute anxiety. This adaptation, while not specifically studied, demonstrates the potential importance of supporting personnel in high-stress occupations who expect to encounter an ASR in team members. Building on the current research, future research is encouraged to advance the contributions of iCOVER as an evidence-informed training that can help prepare individuals in high-stress occupations provide an effective peer-to-peer intervention that addresses the impact of ASRs on occupational performance.

ACKNOWLEDGMENTS

We thank Yvonne Allard, Antonio Best, Richard Gonzales, Paul Kim, Pam Kumparatana, Jason Nolet, Lyndon Riviere, Molly Schwalb, Amanda Start and Vlad Svetlitzky.

NOTE

1. YaHaLOM is a Hebrew acronym that represents each of the five steps. See, Svetlitzky, Farchi, Ben Yehuda, Adler (2020) for details regarding each word in the acronym.

DATA AVAILABILITY

The data in this study are not publicly available due to institutional regulations related to human participant protection requirements but can be made available from the corresponding author upon reasonable request (may require data use agreements to be developed).

DISCLAIMER

Material has been reviewed by the Walter Reed Army Institute of Research. There is no objection to its presentation and/or publication. The opinions or
assertions contained herein are the private views of the author and are not to be construed as official, or as reflecting true views of the Department of the Army or the Department of Defense. The investigators have adhered to the policies for protection of human subjects as prescribed in AR 70–25.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author(s).

REFERENCES

Adler, A. B., Start, A. R., Milham, L., Allard, Y. S., Riddle, D., Townsend, L., & Svetlitzky, V. (2020). Rapid response to acute stress reaction: Pilot test of iCOVER training for military units. Psychological Trauma: Theory, Research, Practice, and Policy, 12(4), 431–435. http://dx.doi.org/10.1037/tra0000487

Adler, A. B., Svetlitzky, V., & Gutierrez, I. A. (2020). Post-traumatic stress disorder risk and witnessing team members in acute psychological stress during combat. BJPsych Open, 6(e98), 1–7. http://dx.doi.org/10.1192/bjo.2020.81

Agresti, A. (1990). Categorical data analysis. Wiley.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.).

R Core Team. (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing. https://www.R-project.org/

Solomon, Z., Shklar, R., & Mikulincer, M. (2005). Frontline treatment of combat stress reaction: A 20-year longitudinal evaluation study. American Journal of Psychiatry, 162(12), 2309–2314. http://dx.doi.org/10.1176/appi.ajp.162.12.2309

Solomon, Z., Weisenberg, M., Schwarzwald, J., & Mikulincer, M. (1987). Posttraumatic stress disorder among frontline soldiers with combat stress reaction: The 1982 Israeli experience. American Journal of Psychiatry, 144(4), 448–454. http://dx.doi.org/10.1176/ajp.144.4.448

Svetlitzky, V., Farchi, M., Ben Yehuda, A., & Adler, A. B. (2020). YaHaLOM: A rapid intervention for acute stress reactions in high-risk occupations. Military Behavioral Health, 8(2), 232–242. https://doi.org/10.1080/21635781.2019.1664356

Svetlitzky, V., Farchi, M., Ben Yehuda, A., Start, A. R., Levi, O., & Adler, A. B. (2020). YaHaLOM training in the military: Assessing knowledge, confidence, and stigma. Psychological Services, 17 (2), 151–159. https://doi.org/10.1037/ser0000360

Wan, T. T., Rav-Marathe, K., & Marathe, S. (2016). A systematic review of KAP-O framework for diabetes. Medical Research Archives, 3 (9). https://esmed.org/MRA/mra/article/view/483

World Health Organization. (2018). International statistical classification of diseases and related health problems (11th revision). Retrieved July 16, 2021, from https://icd.who.int/browse11/l-m/en#http%3a%2f%2fid.who.int%2fid%2fentity%2f5035099942

Zohar, J., Sonnino, R., Juven-Wetzler, A., & Cohen, H. (2009). Can posttraumatic stress disorder be prevented? CNS Spectrums, 14(Suppl.1), 44–51. https://pubmed.ncbi.nlm.nih.gov/19169193/

FUNDING

This work was supported by funding from the Military Operational Medicine Research Program (Project #MO220112).

ORCID

Amy B. Adler http://orcid.org/0000-0002-0886-5530
Ian A. Gutierrez http://orcid.org/0000-0002-4880-7570