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Research paper

Effect of crisis response planning vs. contracts for safety on suicide risk in U.S. Army Soldiers: A randomized clinical trial☆

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ABSTRACT

Objective: To evaluate the effectiveness of crisis response planning for the prevention of suicide attempts.
Method: Randomized clinical trial of active duty Army Soldiers (N=97) at Fort Carson, Colorado, presenting for an emergency behavioral health appointment. Participants were randomly assigned to receive a contract for safety, a standard crisis response plan, or an enhanced crisis response plan. Incidence of suicide attempts during follow-up was assessed with the Suicide Attempt Self-Injury Interview. Inclusion criteria were the presence of suicidal ideation during the past week and/or a lifetime history of suicide attempt. Exclusion criteria were the presence of a medical condition that precluded informed consent (e.g., active psychosis, mania). Survival curve analyses were used to determine efficacy on time to first suicide attempt. Longitudinal mixed effects models were used to determine efficacy on severity of suicide ideation and follow-up mental health care utilization.
Results: From baseline to the 6-month follow-up, 3 participants receiving a crisis response plan (estimated proportion: 5%) and 5 participants receiving a contract for safety (estimated proportion: 19%) attempted suicide (log-rank $\chi^2(1)=4.85$, p=0.028; hazard ratio=0.24, 95% CI=0.06–0.96), suggesting a 76% reduction in suicide attempts. Crisis response planning was associated with significantly faster decline in suicide ideation ($F(3,195)=18.64$, $p < 0.001$) and fewer inpatient hospitalization days ($F(1,82)=7.41$, $p < 0.001$). There were no differences between the enhanced and standard crisis response plan conditions.
Conclusion: Crisis response planning was more effective than a contract for safety in preventing suicide attempts, resolving suicide ideation, and reducing inpatient hospitalization among high-risk active duty Soldiers.

1. Introduction

Due to the rapid rise in U.S. Army suicides (Schoenbaum et al., 2014), interest in developing effective strategies to prevent suicidal behavior in the military has increased. Recent findings indicate that brief cognitive behavioral therapy (CBT), a 12-session outpatient psychotherapy, reduced suicide attempts by 60% in a sample of active duty Soldiers Rudd et al., 2015). Unfortunately, during the month preceding their deaths, Soldiers who die by suicide are much less likely to visit a mental health clinic as they are to visit nonpsychiatric clinical settings (e.g., primary care, family medicine, emergency medicine) (Trofimovich et al., 2012), suggesting the majority of at-risk Soldiers are unlikely to receive such treatments. Suicide rates in the U.S. general population have also risen during the past decade, prompting the Joint Commission to release an updated Sentinel Event Alert focused on the assessment and treatment of suicidal patients across all health care settings (The Joint Commission, 2016). Effective, highly transportable risk management strategies that can be easily implemented are therefore needed.

One widely-used strategy is the contract for safety, also known as the no-suicide contract, which entails eliciting a commitment from the suicidal patient to avoid engaging in suicidal behavior (Simon, 1999; Weiss, 2001; Range et al., 2002; Assey, 1985; Callahan, 1996; Kelly and Knudson, 2000; Kroll, 2000). Despite widespread use across

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medical disciplines, accumulating consensus is that contracting for safety may be ineffective (Kelly and Knudson, 2000; Reid, 1998; Shaffer and Pfeffer, 2001; Stanford et al., 1994) or potentially even harmful (Shaffer and Pfeffer, 2001; Rudd et al., 2006). The Joint Commission has therefore recommended (The Joint Commission, 2016) alternative strategies such as crisis response planning (Rudd et al., 2006; Bryan, 2010) and the related safety planning intervention (Stanley and Brown, 2012). Written on a small card, crisis response planning outlines steps for identifying one's personal warning signs, using coping strategies, activating social support, and accessing professional services (Rudd et al., 2006; Bryan, 2010; Stanley and Brown, 2012). The crisis response plan therefore outlines what to do during a crisis (i.e., use a range of coping strategies), an approach that sharply contrasts with the contract for safety, which outlines what *not* to do during a crisis (i.e., engage in suicidal behavior). Like the contract for safety, however, use of crisis response plans is largely based on clinicians' beliefs about effectiveness rather than actual empirical data (Kelly and Knudson, 2000; Hogan, 2016). Its adoption across psychiatric and nonspsychiatric health care settings (e.g., emergency departments, primary care clinics, inpatient psychiatric units, outpatient psychotherapy) has therefore occurred in the absence of explicit empirical testing.

The primary aim of the current study was to compare the effectiveness of crisis response planning on suicidal thoughts and behaviors during a 6-month follow-up period among active duty Soldiers as compared to supportive counseling with a verbal contract for safety. To this end, our first hypothesis was that crisis response planning would be significantly better than the contract for safety in reducing suicide attempts and suicide ideation. Recent evidence suggests that one mechanism of action contributing to reductions in suicide attempts in brief CBT is the strengthening of the patient's desire to live (Bryan et al., 2016). As such, we additionally sought to determine if the crisis response plan's effects could be enhanced by adding a component designed to clarify the patient's reasons for living. Our second hypothesis was that the enhanced crisis response plan would be significantly better than the standard crisis response plan and the contract for safety.

2. Methods

2.1. Participants and procedures

Participants were 97 active duty U.S. Army personnel (78% male) aged 19–53 years (M=26.1, SD=6.4) with active suicide ideation and/or a lifetime history of suicide attempt who voluntarily presented to a military medical clinic for an emergency behavioral health evaluation at Fort Carson, Colorado, from January to December 2013 and January 2015 to February 2016. There was a one-year gap in enrollment from January to December 2014 due to a temporary administrative closure of the study by the Madigan Army Medical Center's Institutional Review Board following staffing changes among collaborating Army personnel. The impact of this one-year delay on study outcomes is discussed below in the Data Analysis section.

Participants were recruited from the emergency department (n=8, 8.2%), the outpatient behavioral health clinic (n=55, 56.7%), and embedded behavioral health clinics (n=34, 35.1%) located at Fort Carson, Colorado. To maximize generalizability, the only exclusion criterion was an inability to provide informed consent due to impaired mental status (e.g., acute intoxication, psychosis, mania). Baseline characteristics of the sample are reported in Table 1. Inclusion criteria were the presence of suicide ideation during the past week and/or a lifetime history of suicide attempt; active duty military status; age 18 years or older; ability to speak English; and ability to understand and complete informed consent procedures. Soldiers were excluded if they had a medical or psychiatric condition that would preclude informed consent (e.g., active psychosis or mania).

Table 1
Baseline demographic and diagnostic characteristics.

Variable	All (n=97)	Treatment Condition		
		TAU (n=32)	CRP (n=32)	E-CRP (n=33)
Age, M (SD), y	26.1 (6.4)	25.4 (5.3)	27.0 (6.9)	26.0 (6.8)
Deployments, M (SD)	1.2 (1.2)	1.2 (1.1)	1.2 (1.2)	1.2 (1.4)
Military service, M (SD), y	5.4 (5.2)	5.3 (4.1)	5.9 (6.4)	4.9 (4.9)
Male gender, n (%)	76 (78)	24 (75)	24 (73)	28 (88)
Rank, n (%)				
E1-E4	73 (75)	22 (69)	24 (75)	27 (82)
E5-E6	15 (16)	5 (16)	4 (13)	6 (18)
E7-E9	4 (4)	2 (6)	2 (6)	0 (0)
Officer	5 (5)	3 (9)	2 (6)	0 (0)
Race, n (%)				
White	71 (74)	25 (78)	20 (65)	26 (79)
Black	17 (18)	6 (19)	7 (23)	4 (12)
Asian	4 (4)	1 (3)	1 (3)	2 (6)
Pacific Island	3 (3)	1 (3)	2 (7)	0 (0)
Native Amer.	8 (8)	2 (6)	1 (3)	5 (15)
Other	2 (2)	0 (0)	1 (3)	1 (3)
Hispanic ethnicity, n (%)	7 (7)	2 (6)	2 (7)	3 (9)
Psychiatric diagnosis, n (%)				
Any adjustment disorder	43 (44)	13 (41)	15 (47)	15 (46)
Any depressive disorder	38 (39)	16 (50)	9 (28)	13 (39)
Any bipolar disorder	15 (16)	6 (19)	5 (15)	4 (13)
Any anxiety disorder	19 (20)	6 (19)	7 (22)	6 (18)
Any stressor disorder	12 (12)	4 (13)	5 (16)	3 (9)
Any personality disorder	8 (8)	4 (13)	3 (9)	1 (3)
Any psychotic disorder	2 (2)	0 (0)	1 (3)	1 (3)
Suicide attempt history, n (%)				
0	43 (44)	11 (34)	15 (47)	17 (52)
1	24 (25)	8 (25)	8 (25)	8 (24)
2+	30 (31)	13 (41)	9 (28)	8 (24)
Referral location, n (%)				
Emergency department	7 (7)	2 (6)	2 (6)	3 (9)
Specialty behavioral health clinic	56 (58)	16 (50)	20 (63)	20 (61)
Embedded behavioral health team	34 (35)	14 (44)	10 (31)	10 (30)

Soldiers who presented to the emergency department or a behavioral health clinic for a voluntary emergency behavioral health appointment were referred to a research therapist if they reported recent suicide ideation and/or a lifetime history of suicide attempt on clinic paperwork. Research therapists conducted a suicide risk assessment using the Beck Scale for Suicide Ideation (described below) to determine eligibility. Soldiers meeting eligibility criteria were then informed about study procedures. To preserve participant blinding, Soldiers were informed that they would be assigned to "one of three interventions that are commonly used by health care providers." The three interventions were referred to by number only (i.e., crisis response plan 1, 2, or 3). Soldiers were informed that all three interventions included some combination of supportive counseling, strategies to manage emotional distress, education about crisis services, and referrals to treatment services, and differed only with respect to how much of each element was included. After signing the informed consent document, research therapists administered a structured clinical interview focused on suicide attempt history. Upon completion, the participant completed self-report measures via laptop computer, after which the research therapist executed a computerized simple randomization procedure. Intervention group was designated by color (red, green, or blue) to prevent inadvertent breaking of blinding. The therapist selected the appropriate color-coded manual and administered the assigned intervention, which was audio recorded for fidelity