Brief cognitive behavioral therapy reduces suicidal ideation in veterans with chronic illnesses

Anthony H. Ecker[a,b,c,*], Adrienne L. Johnson[d,1], Shubhada Sansgiry[a,b,c], Terri L. Fletcher[a,b,c], Natalie Hundt[a,b,c], Nancy J. Petersen[a,b,c], Alison C. Sweeney[d,c], Angelic D. Chaison[d,c], Kaki M. York-Ward[d,c], Michael R. Kauth[a,b,c], Mark E. Kunik[a,b,c], Jeffrey A. Cully[a,b,c]

[a] Houston VA HSR&D Center for Innovations in Quality, Effectiveness and Safety, Michael E. DeBakey VA Medical Center, (MEDVAMC 152), 2002 Holcombe Blvd., Houston, TX 77030, USA
[b] VA South Central Mental Illness Research, Education and Clinical Center (a virtual center), USA
[c] Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030, USA
[d] Michael E. DeBakey Veterans Affairs Medical Center, 2002 Holcombe Blvd., Houston, TX 77030, USA

ARTICLE INFO

ABSTRACT

Objective: We evaluated the effect of brief cognitive behavioral therapy (bCBT) on suicidal ideation among medically ill veterans receiving mental health treatment in primary care.

Methods: Secondary analysis was conducted on data collected during a multisite, patient-randomized trial investigating the impact of bCBT ($n = 180$) on depression and anxiety symptoms, relative to enhanced usual care (EUC; $n = 122$), in patients with congestive heart failure and/or chronic obstructive pulmonary disease. BCBT was delivered by primary care mental health providers over 4 months, with follow-up posttreatment assessments of suicidal ideation, measured by the Patient Health Questionnaire-9 (item 9) at 4, 8, and 12 months. Suicidal ideation was the primary outcome examined in the current analysis. Generalized estimating equations modeling suicidal ideation were used to compare the study arms.

Results: Participants receiving bCBT were less likely to have high suicidal ideation than participants receiving EUC posttreatment and at 8-month follow-up after accounting for baseline suicidal ideation. Within-group comparisons suggest participants receiving bCBT were less likely to have high suicidal ideation at 4, 8, and 12 months when compared with baseline. High suicidal ideation for EUC participants did not differ at 4, or 8 months, but they were less likely to have high suicidal ideation at 12 months.

Conclusion: bCBT in primary care reduces suicidal ideation and may help prevent future suicidal ideation.

1. Introduction

Suicide in the United States is a significant public health concern, with suicide rates increasing 24% from 1999 to 2016 [1]. Engaging individuals in mental health care in the primary care setting is one potential avenue to reduce suicide by reducing stigma and increasing access to critical mental health services [2]. At particular risk for suicide in primary care settings are those with chronic medical illness and comorbid mental health disorders. Over 70% of patients in primary care have a chronic health condition [3], including chronic obstructive pulmonary disease (COPD) and cardiovascular conditions such as heart failure (HF). These conditions are associated with negative effects, including comorbidity with other chronic diseases or medical problems and diminished quality of life, as well as symptoms of depression and other mental health conditions [4–6]. Importantly, chronic illness is related to suicidality, including increased suicidal ideation and suicide attempts including among those with clinically significant depression [7,8].

Over 70% of veterans have a chronic health condition [3], including COPD and HF. Military veterans in the United States are also particularly at risk for suicide, as the rates of suicide among veterans are greater than those of the general U.S. population, with veterans at 20% greater risk than civilians to complete suicide [9–11]. Veterans comprise 8.5% of the population but account for 18% of completed suicides

in the United States [11], and the rates of suicide among older veterans (i.e., > 60 years old) is greater than that for nonveterans of similar ages [12]. Importantly, chronic illness is related to suicidality, including suicidal ideation and suicide attempts among veterans [7]. In light of these striking rates of suicide, suicide prevention among veterans is among the top priorities of the Department of Veterans Affairs (VA).

Access and utilization of mental health services are critical for suicide prevention efforts. Co-located primary mental health care programs have increased access to mental health treatment by providing services in clinical settings where veterans frequently receive medical care. Delivery of mental health services in primary care holds the potential to reduce stigma, a known barrier to reducing suicidality in veterans [13], as well as address anxiety and depression which are strongly associated with completed veteran suicides.

Psychotherapy, including cognitive behavioral therapy (CBT), delivered in specialty mental health settings, has been found to be effective for reducing suicidality [for review see [14]]. In a military population, a brief version of CBT that targeted suicidality resulted in reduced suicide attempts compared to treatment as usual among service members with suicidal ideation or attempts [15]. Although these results provide robust efficacy data for specialty mental health settings, additional work is needed in primary care settings where many individuals experience suicidal ideation but do not receive mental health treatment [16].

In a prior trial, a brief CBT (bCBT) intervention was developed and tested for medically ill veterans with elevated symptoms of depression and/or anxiety. bCBT was delivered by VA mental health providers in primary care settings, with positive effects on depression, anxiety, and physical health quality of life [17]. This protocol focuses on brief treatment of depression and anxiety in the context of medical illness, using a CBT skills-based approach, and does not explicitly target suicidality. The effects of primary care-delivered bCBT on suicidal ideation are unknown. Given bCBT's positive impact on mental health symptoms [17], it has the potential to serve as a suicide prevention tool through treating mental health symptoms in clinics where individuals with chronic illness already receive care.

The aim of the current study was to use secondary analysis of data from a prior trial to determine the effect of bCBT on suicidal ideation among veterans with cardiopulmonary chronic illness receiving mental health treatment in the primary care setting. The parent hybrid effectiveness/implementation trial from which the current data were obtained found that participants who received bCBT in a primary care setting showed reductions in symptoms of both depression and anxiety [17], with modest improvements on health-related quality of life. In light of these findings and work showing that CBT more broadly is effective in reducing suicidal ideation even when not a direct target of the treatment [14], it was hypothesized that veterans receiving bCBT would be more likely than veterans who did not receive the intervention to report decreased suicidal ideation.

2. Method

2.1. Participants

The parent study [17,18] used a patient-randomized trial to test the impact of bCBT on depression and anxiety symptoms relative to an enhanced usual care (EUC) arm. Participants were recruited from primary care clinics at the Michael E. DeBakey (Houston) and Oklahoma City VA Medical Centers. The VA Corporate Data Warehouse (CDW) was used to identify potential participants with a diagnosis of HF or COPD. Participants were initially screened for depression and anxiety symptoms as in prior work in this chronically ill population [19], as well as functional impairment related to medical diagnoses. Exclusion criteria included concurrent psychotherapy treatment; suicide intent/plan; symptoms of substance use, or diagnoses of bipolar or neurocognitive disorders. Finally, participants were included based on

Table 1
Participant characteristics at baseline.

	Overall n (%)	bCBT n (% of total n)	EUC n (% of total n)	p value
	302(100)	180(64. 9)	122(66.5)	
Age, Mean(SD)	65.5(8.6)	64.9(8.8)	66.5(8.3)	0.1037
Education				0.9966
High school or less	123(40.7)	73(40.6)	50(41.0)	
Some college	134(44.4)	80(44.4)	54(44.3)	
College graduate	45(14.9)	27(15.0)	18(14.8)	
Sex (% male)	285(94.4)	169(93.9)	116(95.1)	0.6589
Race/ethnicity				0.3010
Non-Hispanic White	205(67.9)	120(66.7)	85(69.7)	
African American	69(22.9)	42(23.3)	27(22.1)	
Hispanic	8(2.7)	3(1.7)	5(4.1)	
Other	20(6.6)	15(8.3)	5(4.1)	
Living status				0.1353
Alone	70(23.2)	35(19.4)	35(28.7)	
Spouse	169(56.0)	108(60.0)	61(50.0)	
Family/other	63(20.9)	37(20.6)	26(21.3)	
Marital status				0.1674
Married	185(61.3)	116(64.4)	69(56.6)	
Not married	117(38.7)	64(35.6)	53(43.4)	
Income				0.4728
Less than $20 k	104(34.7)	67(37.4)	37(30.6)	
$20–39 k	107(35.7)	61(34.1)	46(38.0)	
$40 + k	89(29.7)	51(28.5)	38(31.4)	
COPD/HF functional impairment				0.5705
Mild	66(21.9)	43(23.9)	23(18.9)	
Moderate	146(48.3)	84(46.7)	62(50.8)	
Severe	90(29.8)	53(29.4)	37(30.3)	
PHQ-9				
Total score, Mean (SD)	14.2(4.8)	13.8(4.6)	14.9(5.1)	0.0584
% endorsing suicidality[a]	38(12.6)	16(8.9)	22(18.0)	
Suicidal ideation				0.0413
None	221(73.2)	140(77.8)	81(66.4)	
Low	43(14.2)	24(13.3)	19(15.6)	
High	38(12.6)	16(8.9)	22(18.0)	
BAI total score, Mean (SD)	22.0(9.6)	21.4(8.9)	22.9(10.7)	0.2100
N (%) with depression and anxiety diagnosis	190(62.9)	113(62.8)	77(63.1)	0.9526

Note: higher scores on PHQ-9 and BAI indicate higher levels of depression and anxiety, respectively.

bCBT = brief cognitive behavioral therapy; EUC = enhanced usual care; COPD = chronic obstructive pulmonary disease; HF = heart failure; PHQ-9 = Nine-item Patient Health Questionnaire; BAI = Beck Anxiety Inventory.

a Endorsing a score of 1, 2, or 3.

anxiety or depression symptoms, either a score > 15 on the Beck Anxiety Inventory [20] or a score greater than nine on the Patient Health Questionnare-9 (PHQ-9) [21].

The final sample included 302 participants who were randomized to either bCBT (n = 180) or EUC (n = 122). The full CONSORT diagram can be found in Cully and colleagues [22], and participant flow after randomization is presented in Fig. 2. Participants were predominately male and non-Hispanic White (see Table 1 for full demographic information). All participants endorsed elevated depression or anxiety symptoms, and the majority met criteria for a diagnosis of depressive or anxiety disorders (Table 1). In the bCBT condition, 26.7% of participants dropped out or were lost to follow-up, which is greater than percentage observed in EUC (17.2%). Given that this condition involved more participant involvement than usual care, it is likely that treatment burden, in concert with difficulties related to chronic illness, contributed to the attrition rate. This rate is similar to those observed in other effectiveness studies of outpatient CBT [23]. In the current sample, 26.8% endorsed suicidal ideation at baseline. To maximize the

applicability of the secondary analyses to a primary care population, and to capture suicidal ideation that could emerge at follow-up points, the full sample was retained in the current analysis rather than selecting a sub-sample of participants endorsing suicidal ideation. Attrition between baseline and 4-month follow-up among only those participants who endorsed suicidal ideation at baseline at any level is as follows: in the bCBT condition, 11 participants (27%) did not complete follow-up; in EUC, five (9.75%) did not complete follow-up. Further, attrition did not significantly differ whether participants endorsed suicidal ideation at four months ($\chi^2(1, N = 302) = 1.77$, $p = 0.278$), eight months ($\chi^2(1, N = 302) = 0.13$, $p = 0.737$) or 12 months ($\chi^2(1, N = 302) = 0.42$, $p = .557$).

2.2. Treatment conditions

Treatment conditions included bCBT and EUC.

2.2.1. bCBT

Participants randomized to bCBT ($n = 180$) received manualized weekly or biweekly sessions delivered by mental health providers and advanced mental health trainees (i.e., postdoctoral psychology fellows or psychology residents) delivering care in the primary care setting. Information on the development of the manual, content and delivery is reported in prior work [17,22]. Participants and therapists worked collaboratively from a menu of modules to identify the CBT skills most important to the needs of the veteran. This menu included standard CBT elements, including use of coping statements, behavioral activation and relaxation skills, as well as elements targeting physical health conditions (e.g., chronic disease self-management, coping with medical exacerbations, communicating with medical providers). Skill selection began after two "core" sessions, which were standardized across participants in the bCBT arm and served to introduce CBT principles and guide the veteran to select treatment modules based on his/her most pressing concerns. Given the pragmatic nature of the trial and the approach of selecting skills from a menu, not all participants received the same modules; and some participants received multiple sessions on one skill. On average, participants received 3.9 bCBT sessions (range = 0–8); and 70.6% of the sample received at least one skill session.

2.2.2. EUC

Participants randomized to this arm ($n = 122$) were assessed for anxiety and depression symptoms, which study staff documented in their medical record with the recommendation that providers address these concerns as a part of their standard practice.

2.3. Outcome measure

The primary outcome of interest in the current study was suicidal ideation, as measured by the PHQ-9. The PHQ-9 is a nine-item questionnaire that assesses symptoms of depression over the past 2 weeks. Item nine of the measure asks participants to rate how often they have thoughts that they would be better off dead or that they would like to hurt themselves on a scale from 0 (*not at all*) to 3 (*nearly every day*). Higher scores reflect greater frequency of suicidal ideation. The PHQ-9

has shown sensitivity and specificity in identifying depression in primary care clinics [24], and the suicidal ideation item is positively associated with suicide risk among patients in the Veterans Health Administration [25]. Participants completed this measure at baseline (i.e., pretreatment), and posttreatment (4-month follow-up), and at 8, and 12 months. To facilitate analyses of the single-item data, participants were grouped into the following classifications, based on their score on item nine of the PHQ-9 (*Thoughts that you would be better off dead, or of hurting yourself*): No suicidal ideation, indicated by a score of zero (*Not at all*); low-frequency suicidal ideation, indicated by a score of one (*Several days*); and high-frequency suicidal ideation, indicated by a score of two (*More than half the days*) or three (*Nearly every day*). Given the relatively low frequency of participants endorsing scores of two or three, these two categories were combined to facilitate analysis. The number of bCBT sessions among those in the bCBT group did not differ between participants endorsing no suicidal ideation ($M = 3.84$, $SD = 2.24$), low-frequency suicidal ideation ($M = 4.00$, $SD = 2.50$), and high- frequency suicidal ideation ($M = 3.69$, $SD = 2.15$), $F (2,177) = 0.10$, $p = 0.909$.

2.4. Data analytic strategy

First, to test for differences between study arms at baseline, Chi-square for categorical variables and *t*-tests for continuous variables were conducted. Second, Generalized Estimating Equations using proc. GENMOD procedure were used to model high suicidal ideation and test longitudinal effect of bCBT over time. Interaction of study arm groups by time was modeled. Variables in the model included study group, time and group-by-time interaction. Given the differences between groups on the measure of suicidality, we adjusted for baseline suicidal ideation in the longitudinal model when testing for differences between the two groups posttreatment. All analyses were conducted using SAS 9.4 (SAS Institute, Inc., Cary, NC).

3. Results

Most participants were married and living with a spouse and reported having some college or higher education. The two study arms did not differ on any participant characteristics, including baseline PHQ-9 or Beck Anxiety Inventory scores ($p > 0.05$). The two study arms, however, differed on baseline suicidal ideation, with more individuals in the EUC group (18%) having high suicidal ideation than those in the bCBT group (8.9%) ($p = 0.04$). Baseline comparisons between the two study arms are presented in Table 1. Consistent with hypotheses, adjusting for baseline suicidal ideation, participants in the bCBT group were less likely to have high-frequency suicidal ideation (as opposed to no suicidal ideation) when compared with EUC. This difference in suicidal ideation was seen posttreatment (4 months) and at 8-month follow-up ($p < 0.01$) but not at 12 months (Table 2), indicating that bCBT reduced high suicidal ideation immediately posttreatment, with an effect lasting up until the 8-month assessment.

Within each group over time, both the bCBT ($p < 0.001$) as well as EUC ($p = 0.03$) groups showed change in suicidal ideation. The EUC group did not show any change in suicidal ideation from baseline to 4 or 8 months ($p > 0.05$) but did indicate a reduction of high suicidal

Table 2
Comparison between brief cognitive behavioral therapy and enhanced usual care study groups adjusted for baseline suicidal ideation on likelihood of endorsing high-frequency suicidal ideation.

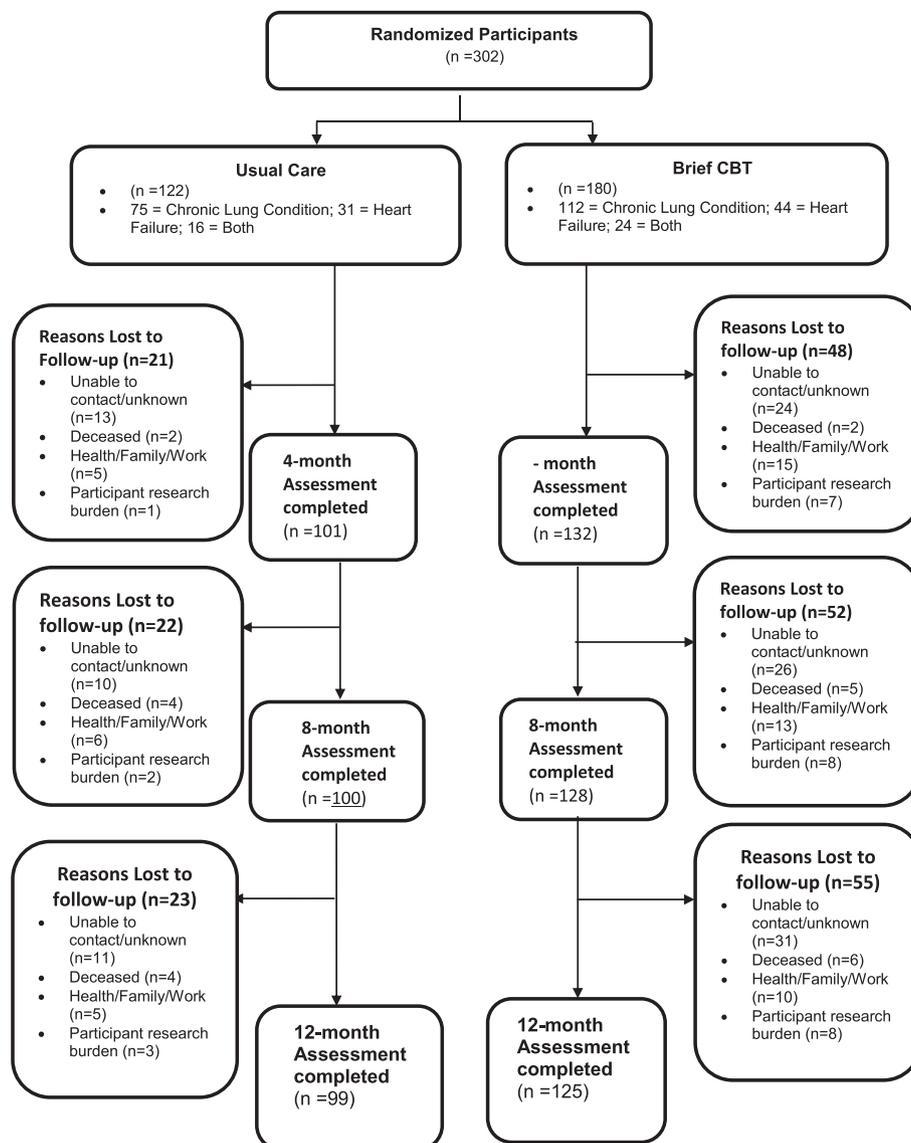| Time point	Estimate (EUC reference group)	Standard error	95% CI	Odds ratio	p value
4 months	−1.27	0.39	−2.0 to −0.5	0.28	0.001
8 months	−1.14	0.41	−2.0 to −0.3	0.32	0.006
12 months	−0.77	0.42	−1.6 to 0.6	0.46	0.069

EUC = enhanced usual care.

Fig. 1. CONSORT diagram.

ideation at 12 months when compared with baseline within the same group ($p = 0.005$). In the bCBT group over time, however, participants at all three points were less likely to have high suicidal ideation when compared with baseline ($p < 0.01$) (Fig. 2).

To further examine the pattern of ratings of suicidal ideation across groups and time points, frequencies were examined. Among only participants who endorsed any suicidal ideation at baseline, the percent of participants rating high-frequency suicidal ideation in the bCBT group ($n = 40$) and EUC group ($n = 41$) and at each time point were graphed (Fig. 1). The frequencies suggest that, among participants who received bCBT, high-frequency suicidal ideation was endorsed by fewer participants at follow-ups relative to baseline and EUC.

4. Discussion

The current findings provide initial evidence that primary care-based bCBT reduces suicidality among veterans with chronic medical illness. These findings extend prior work in several ways. First, this study highlights the multifaceted impact of bCBT, which includes reductions in suicidal ideation among a high-risk veteran population. Results suggest that exposure to a brief evidence-based psychotherapy holds the potential to significantly reduce distress and suicidal ideation
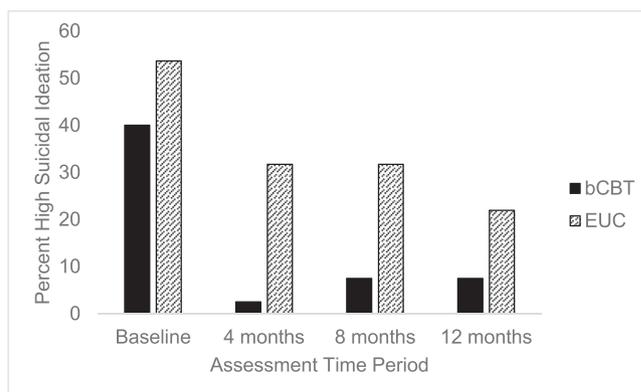

Fig. 2. Percent of participants endorsing high-frequency suicidality at each time point by treatment group within participants endorsing any suicidal ideation.

Note: bCBT = brief cognitive behavior therapy, EUC = enhanced usual care, any suicidal ideation subgroup $n = 81$.

for a prolonged period of time, potentially reducing future suicide-related distress and/or attempts [4,7,26–28]. It is noteworthy that prolonged reduction in suicidality can be achieved from four sessions, representing an efficient model of care that can improve access and engagement to evidence-based psychotherapies that continue to be under-used in integrated health care settings [29,30].

Our finding that bCBT can attenuate suicidal ideation among veterans receiving mental health treatment in primary care has important implications for suicide-prevention approaches. It is especially noteworthy that, in the bCBT group, rates of participants endorsing frequent suicidal ideation dropped sharply at 4 months. This finding is especially striking because the participants were not recruited for suicidal ideation and suggests that bCBT has the potential to quickly impact suicidality as a suicide-prevention tool. Aside from universal prevention efforts (e.g., increased awareness of suicide through health promotion, media campaigns, or widespread screening), suicide intervention and prevention in healthcare systems often focus on reducing suicidality after suicidal thoughts or behaviors are endorsed, observed, or acted upon [31,32]. Although such strategies are effective [33], evidence-based psychotherapy, including CBT for depression, anxiety and other disorders, is also effective in reducing suicidal ideation, even when such ideation is not the explicit focus of the intervention [14,34]. Taken together with the current study findings, these facts suggest that continuing to expand access to evidence-based psychotherapy in nontraditional mental health settings, such as primary care, could be an important addition to broader public health approaches to preventing suicide [35]. Future work would benefit from investigating the effectiveness and cost-effectiveness of bCBT as a prevention or early intervention strategy.

The findings of the current study have several limitations. First, the sample represents a specific population (i.e., older male veterans with medical illness, elevated depression or anxiety, and treated in primary care) that is not necessarily representative of all veterans nor the general public. Further, the sample of veterans was homogeneous, especially with regards to age, sex, and race/ethnicity. Therefore, generalizability of the effects of bCBT on suicide is limited; and future work would benefit from examination of bCBT in primary care with more diverse samples and in non-VA settings. Second, study exclusion criteria further limit generalizability, as veterans with substance use disorders were referred for specialty mental health services outside the primary care setting. Substance use disorders increase risk of suicide among those with elevated depression and anxiety and medical illness, and future work needs to reduce suicide risk among those with substance use disorders. Third, although the number of veterans excluded for active suicidality was small ($n = 3$), those who expressed greater suicide risk were excluded from the current study, which precludes the findings from being applied to veterans with more severe suicide risk. It is noteworthy that no deaths by suicide were reported among the participants, suggesting that suicide was not a factor in attrition. Fourth, the study did not recruit specifically for suicidality; therefore, findings may not generalize to veterans who primarily present for treatment of suicidal ideation. Future work may benefit from recruiting for suicidal ideation more directly to test more specific hypotheses, including whether number of sessions received impacts outcomes. Although prior work has found that number of bCBT sessions was not related to treatment outcomes [36], this has not been evaluated for suicidal ideation. Fifth, suicide attempts or other suicidal behaviors (e.g., planning, preparation) were not measured. Finally, suicidality was measured by only one item on a depression measure. Findings should be replicated using more comprehensive assessment of suicidality.

Despite these limitations, the current study suggests that bCBT provided in primary care among veterans with chronic medical illness has the potential to attenuate suicidal ideation. It is noteworthy that clinicians in primary care treating depression and anxiety can impact suicidality, even when it is not an explicit or direct goal of the treatment. Given the substantial burden of suicide, especially among medically ill veterans, expanding access to mental health treatment in nontraditional settings and using treatments that are easily integrated into the larger healthcare environment are an important research and clinical goal.

Acknowledgments

Conflicts of interest

None.

References

[1] Curtin SC, Warner M, Hedegaard H. Increase in suicide in the United States, 1999–2014. NCHS Data Brief 2016(241):1–8.

[2] Office of the Surgeon, G. and P. National Action Alliance for Suicide. Publications and reports of the surgeon general. 2012 national strategy for suicide prevention: goals and objectives for action: a report of the U.S. surgeon general and of the National Action Alliance for Suicide Prevention. Washington (DC): US Department of Health & Human Services (US); 2012.

[3] Yu W, Ravelo A, Wagner TH, Phibbs CS, Bhandari A, Chen S, et al. Prevalence and costs of chronic conditions in the VA health care system. Med Care Res Rev 2003;60(3 Suppl):146s–67s.

[4] Almagro P, Castro A. Helping COPD patients change health behavior in order to improve their quality of life. Int J Chron Obstruct Pulmon Dis 2013;8:335–45.

[5] Newhouse A, Jiang W. Heart failure and depression. Heart Fail Clin 2014;10(2):295–304.

[6] Dekker RL, Lennie TA, Doering LV, Chung ML, Wu JR, Moser DK. Coexisting anxiety and depressive symptoms in patients with heart failure. Eur J Cardiovasc Nurs 2014;13(2):168–76.

[7] Fleehart S, Fan VS, Nguyen HQ, Lee J, Kohen R, Herting JR, et al. Prevalence and correlates of suicide ideation in patients with COPD: a mixed methods study. Int J Chron Obstruct Pulmon Dis 2015;10:1321–9.

[8] Goodwin RD, Kroenke K, Hoven CW, Spitzer RL. Major depression, physical illness, and suicidal ideation in primary care. Psychosom Med 2003;65(4):501–5.

[9] Kang HK, Bullman TA, Smolenski DJ, Skopp NA, Gahm GA, Reger MA. Suicide risk among 1.3 million veterans who were on active duty during the Iraq and Afghanistan wars. Ann Epidemiol 2015;25(2):96–100.

[10] Kaplan MS, Huguet N, McFarland BH, Newsom JT. Suicide among male veterans: a prospective population-based study. J Epidemiol Community Health 2007;61(7):619–24.

[11] Office of Suicide Prevention. Department of Veterans Affairseditor. Suicide among veterans and other Americans. 2016.

[12] Hoffmire CA, Kemp JE, Bossarte RM. Changes in suicide mortality for veterans and nonveterans by gender and history of VHA service use, 2000–2010. Psychiatr Serv 2015;66(9):959–65.

[13] Pietrzak RH, Johnson DC, Goldstein MB, Malley JC, Southwick SM. Perceived stigma and barriers to mental health care utilization among OEF-OIF veterans. Psychiatr Serv 2009;60(8):1118–22.

[14] Tarrier N, Taylor K, Gooding P. Cognitive-behavioral interventions to reduce suicide behavior: a systematic review and meta-analysis. Behav Modif 2008;32(1):77–108.

[15] Rudd MD, Bryan CJ, Wertenberger EG, Peterson AL, Young-McCaughan S, Mintz J, et al. Brief cognitive-behavioral therapy effects on post-treatment suicide attempts in a military sample: results of a randomized clinical trial with 2-year follow-up. Am J Psychiatry 2015;172(5):441–9.

[16] Ashrafioun L, Leong SH, Pigeon WR, Oslin DW. The associations between suicidality and mental health factors and pain interference in veterans being referred to primary care mental health integration. Psychiatry Res 2018;269:264–70.

[17] Cully JA, Stanley MA, Petersen NJ, Hundt NE, Kauth MR, Naik AD, et al. Delivery of brief cognitive behavioral therapy for medically ill patients in primary care: a pragmatic randomized clinical trial. J Gen Intern Med 2017;32(9):1014–24.

[18] Cully JA, Armento ME, Mott J, Nadorff MR, Naik AD, Stanley MA, et al. Brief cognitive behavioral therapy in primary care: a hybrid type 2 patient-randomized effectiveness-implementation design. Implement Sci 2012;7:64.

[19] Kunik ME, Azzam PN, Souchek J, Cully JA, Wray NP, Krishnan LL, et al. A practical screening tool for anxiety and depression in patients with chronic breathing

disorders. Psychosomatics 2007;48(1):16–21.

[20] Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. J Consult Clin Psychol 1988;56(6):893–7.

[21] Kroenke K, Spitzer RL. The PHQ-9: a new depression diagnostic and severity measure. Psychiatr Ann 2002;32(9):509–15.

[22] Cully JA, Paukert A, Falco J, Stanley M. Cognitive-behavioral therapy: innovations for cardiopulmonary patients with depression and anxiety. Cogn Behav Pract 2009;16:394–407.

[23] Hans E, Hiller W. Effectiveness of and dropout from outpatient cognitive behavioral therapy for adult unipolar depression: a meta-analysis of nonrandomized effectiveness studies. J Consult Clin Psychol 2013;81(1):75–88.

[24] Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med 2001;16(9):606–13.

[25] Louzon SA, Bossarte R, McCarthy JF, Katz IR. Does suicidal ideation as measured by the PHQ-9 predict suicide among VA patients? Psychiatr Serv 2016;67(5):517–22.

[26] McMurray JJV, Adamopoulos S, Anker SD, Auricchio A, Böhm M, Dickstein K, et al. ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2012 the Task Force for the diagnosis and treatment of acute and chronic heart failure 2012 of the European Society of Cardiology. Developed in collaboration with the Heart Failure Association (HFA) of the ESC. Eur Heart J 2012;33(14):1787–847.

[27] Burney PG, Patel J, Newson R, Minelli C, Naghavi M. Global and regional trends in COPD mortality, 1990–2010. Eur Respir J 2015;45(5):1239–47.

[28] Lloyd-Jones D, Adams R, Carnethon M, De Simone G, Ferguson TB, Flegal K, et al. Heart disease and stroke statistics—2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation 2009;119(3):e21–181.

[29] Wray LO, Szymanski BR, Kearney LK, McCarthy JF. Implementation of primary care-mental health integration services in the Veterans Health Administration: program activity and associations with engagement in specialty mental health services. J Clin Psychol Med Settings 2012;19(1):105–16.

[30] Cape J, Whittington C, Buszewicz M, Wallace P, Underwood L. Brief psychological therapies for anxiety and depression in primary care: meta-analysis and meta-regression. BMC Med 2010;8:38.

[31] Mann J, Apter A, Bertolote J, et al. Suicide prevention strategies: a systematic review. JAMA 2005;294(16):2064–74.

[32] Bruce ML. Suicide risk and prevention in veteran populations. Ann N Y Acad Sci 2010;1208(1):98–103.

[33] Zalsman G, Hawton K, Wasserman D, van Heeringen K, Arensman E, Sarchiapone M, et al. Suicide prevention strategies revisited: 10-year systematic review. Lancet Psychiatry 2016;3(7):646–59.

[34] Manber R, Bernert RA, Suh S, Nowakowski S, Siebern AT, Ong JC. CBT for insomnia in patients with high and low depressive symptom severity: adherence and clinical outcomes. J Clin Sleep Med 2011;7(6):645–52.

[35] U.S. Department of Veterans Affairs. U.S.D.o.V Affairseditor. National strategy for preventing veteran suicide 2018–2028. 2018.

[36] Hundt NE, Renn BN, Sansgiry S, Petersen NJ, Stanley MA, Kauth MR, et al. Predictors of response to brief CBT in patients with cardiopulmonary conditions. Health Psychol 2018;37(9):866–73.