The Effect of Targeted and Tailored Patient Depression Engagement Interventions on Patient–Physician Discussion of Suicidal Thoughts: A Randomized Control Trial

Ruby Shah, MD, MPH¹, Peter Franks, MD², Anthony Jerant, MD², Mitchell Feldman, MD, Phil, FACP³, Paul Duberstein, PhD⁴, Erik Fernandez y Garcia, MD, MPH⁵, Ladson Hinton, MD⁶, Lorrie Strohecker, MD, MPH⁷, and Richard L. Kravitz, MD, MPSH¹

¹UC Davis Division of General Medicine and Center for Healthcare Policy and Research, Sacramento, CA, USA; ²UC Davis Department of Family and Community Medicine and Center for Healthcare Policy and Research, Sacramento, CA, USA; ³UC San Francisco Division of General Internal Medicine, San Francisco, CA, USA; ⁴University of Rochester Department of Psychiatry, Rochester, NY, USA; ⁵UC Davis Department of General Pediatrics and Center for Healthcare Policy and Research, Sacramento, CA, USA; ⁶Department of Psychiatry and Behavioral Sciences, University of California Davis, Sacramento, CA, USA; ⁷Sacramento VA Medical Center Department of General Internal Medicine, Sacramento, CA, USA.

BACKGROUND: Despite improvements in the diagnosis and treatment of depression, primary care provider (PCP) discussion regarding suicidal thoughts among patients with depressive symptoms remains low.

OBJECTIVE: To determine whether a targeted depression public service announcement (PSA) video or an individually tailored interactive multimedia computer program (IMCP) leads to increased primary care provider (PCP) discussion of suicidal thoughts in patients with elevated risk for clinical depression when compared to an attention control.

DESIGN: Randomized control trial at five different healthcare systems in Northern California; two academic, two Veterans Affairs (VA), and one group-model health maintenance organization (HMO).

PARTICIPANTS: Eight-hundred sixty-seven participants, with mean age 51.7; 43.9 % women, 43.4 % from a racial/ethnic minority group.

INTERVENTION: The PSA was targeted to gender and socio-economic status, and designed to encourage patients to seek depression care or request information regarding depression. The IMCP was an individually tailored interactive health message designed to activate patients to discuss possible depressive symptoms. The attention control was a sleep hygiene video.

MAIN MEASURES: Clinician reported discussion of suicidal thoughts. Analyses were stratified by depressive symptom level (Patient Health Questionnaire [PHQ-9] score <9 [mild or lower] versus ≥ 10 [at least moderate]).

KEY RESULTS: Among patients with a PHQ-9 score ≥ 10 , PCP discussion of suicidal thoughts was significantly higher in the IMCP group than in the control group (adjusted odds ratio=2.33, 95 % confidence interval=1.5, 5.10, $p=0.03$). There were no significant

effects of either intervention on PCP discussion of suicidal thoughts among patients with a PHQ-9 score <9.

CONCLUSIONS: Exposure of patients with at least moderate depressive symptoms to an individually tailored intervention designed to increase patient engagement in depression care led to increased PCP discussion of suicidal thoughts.

KEY WORDS: suicide; depression; patient–physician communication.

J Gen Intern Med 29(8):1148–54

DOI: 10.1007/s11606-014-2843-8

© Society of General Internal Medicine 2014

INTRODUCTION

Suicide is responsible for nearly one million deaths per year worldwide,^{1,2} and suicide attempts often lead to additional morbidity, increased health care costs and increased risk of subsequent death by suicide.^{3,4} Although suicide is more prevalent in those with depression, patients who die by suicide rarely see mental health specialists prior to their death.^{5–7} In contrast, nearly half of the individuals who complete suicide attempts have seen their primary care provider (PCP) in the preceding month.^{8,9} The primary care visit is thus an important target for suicide prevention.

Suicidality refers to a spectrum of thoughts and behaviors ranging from passive thoughts of one's death, to active thoughts of self-harm, to a suicidal plan for self-harm along with the means to carry it out.¹⁰ Prior studies suggest that interventions improving healthcare provider recognition of depression and suicidal risk lead to lower suicide rates.¹¹ Additionally, national guidelines challenge PCPs to improve detection of suicidality as a means to prevent suicide.^{12,13} Despite this guidance, screening for suicidality and assessing suicidal risk by PCPs remains low.^{9,14–17}

Trial Registration: ClinicalTrials.gov Identifier NCT01144104

Received September 12, 2013

Revised January 2, 2014

Accepted March 3, 2014

Published online April 8, 2014

Patient, clinician and encounter related factors can all act as barriers to clinician suicide discussion.^{18,19} Past studies have focused on addressing clinician barriers by improving recognition of depression and promoting diagnosis and treatment. Treatment algorithms, clinician education programs and nurse care management supporting PCPs have all been described as effective interventions.¹¹ However, a number of patient-related barriers, such as stigmatizing depression beliefs, or beliefs about the role of the PCP, have been shown to inhibit direct PCP inquiry and patient disclosure of suicidality.^{20–22} An intervention that addresses patient-related barriers to disclosure and clears the way for suicide discussion by PCPs (the discussion of patient suicidality) could have significant public health impact.

In this planned analysis, we compared the effects of two different brief patient-focused depression engagement interventions with an attention control on PCP discussion of suicidal thoughts during visits. Both interventions sought to increase patient recognition and discussion of possible depressive symptoms with providers, and, in turn, prompt appropriate initial diagnosis and treatment of depression by PCPs. The interventions were provided via computer in primary care offices, immediately prior to provider visits. One intervention was a brief, targeted public service announcement (PSA) based on the direct to consumer advertising approach but free of commercial bias. The other was a research-driven and tailored interactive multimedia computer program (IMCP) based on health behavior and patient activation theory. The IMCP was designed primarily to activate patients endorsing current emotional symptoms (including thoughts of self-harm) and/or physical symptoms potentially indicative of depression to discuss the symptoms and the possibility of depression with the study visit doctor. In the current analyses, we examined the effects of these interventions in two subgroups of patients: those with mild or lower depressive symptoms (defined by a Patient Health Questionnaire (PHQ-9) score of ≤ 9) and those with at least moderate depressive symptoms (PHQ-9 score ≥ 10). Those with PHQ-9 scores greater than or equal to 10 are more likely to be diagnosed with major depression,^{23,24} and 30 times more likely to have suicidal thoughts than those with lower scores, making them a better target for screening and interventions.^{25–27}

METHODS

Study Setting/Participants

This study was a multicenter, stratified, parallel group randomized controlled trial comparing the effects of a targeted patient intervention, a tailored patient intervention and a control on patient and encounter related behaviors and outcomes. The methods are briefly summarized here and detailed elsewhere.^{28,29}

Patients and primary care clinicians were recruited from each site, all of which were clinics affiliated with the University of California (UC) Davis and UC San Francisco (UCSF). UCSF clinics were all adult primary care academic clinics with residents, their supervising physicians, and nurse practitioners, while UC Davis affiliated clinics included resident clinics as well as clinics in the primary care network (both urban and suburban settings where care is provided by full-time PCPs). Other performance sites included primary care clinics in Sacramento associated with Kaiser Permanente, the Sutter Medical Group and the United States Department of Veterans Affairs (VA) Northern California Health System. The VA Medical Center in San Francisco was also included.²⁸ Institutional review boards at each study site provided approval for the study protocol.

The clinicians were recruited through email or in person at informal presentations. Up to 12 patients of the consenting clinicians (120 practicing PCPs, nine residents, and six nurse practitioners) were contacted by research assistants through a telephone interview for recruitment and to screen for eligibility. Clinicians were told that the trial was a randomized trial examining the effects of interventions meant to improve patient-physician communication. Clinicians were not blinded to patient's participation, but were blinded to patients' group assignments and the study hypothesis.

Patients who were scheduled for a routine primary care visit at any site in the subsequent 1–2 weeks were randomly selected from each clinic's schedule and phoned for screening by research staff. Patients with any chief complaint were eligible for inclusion, that is, both depressed and non-depressed patients, and patients without mental health complaints. Patients were eligible if they were aged 25–70 years, spoke and read English, reported ability to use a computer and were not currently on medication for depression by self-report. Patients were screened using the PHQ-8 (used instead of PHQ-9 for telephone screening) and two parallel samples were taken based on score (≥ 5 and < 5). A lower cut point was used (≥ 5) to include patients with milder symptoms, in order not to miss depression in these individuals. To enrich the study sample, all patients with a PHQ-8 score of ten or more were invited to participate. After verbal consent was provided via telephone, the patients were invited to a research appointment for informed consent 1 hour prior to the primary care visit. At the UCSF urgent care clinic only, no telephone screening took place and patients were approached in waiting rooms prior to their clinic visit. A computer program stratified consented patients by race/ethnicity, gender and site, and then randomly assigned them to one of the three study arms shortly before a primary care visit previously scheduled for clinical care (i.e., not study-specific). Clinic site was chosen as a stratification variable to account for provider effects.

We chose individual patients rather than clinicians as the unit of randomization, because the intervention functioned at the patient level.

Patients next completed a pre-visit survey on the tablet computer composed of questions for use in targeting/tailoring and assessing baseline physical and mental health status (PHQ-9, short form 12-item health survey [SF-12]). The patients then watched their randomly assigned intervention on the tablet computer and proceeded to the clinic visit. Immediately following the office visit, patients completed a post-visit questionnaire. Patients were compensated for their time with a gift card distributed at the primary care visit.

Interventions

PSA. The PSA was a targeted health message that was designed to encourage patients to seek depression care or request information regarding depression. The PSAs were jointly developed by collaboration between academic researchers and a marketing firm in Rochester, NY. The academic researchers used a combination of clinical experience and data derived from focus groups and a population-based survey, which is described elsewhere.³⁰ Four different PSAs were produced, each targeting a different group based on gender and household income (< \$35,000 or ≥ \$35,000): lower income female, lower income male, higher income female and higher income male.

IMCP. The over-arching aim of the IMCP was to activate patients to discuss with the doctor during the study visit their emotional and/or physical symptoms within the past 2 weeks (including thoughts of self-harm), and the possibility that those symptoms reflected clinical depression.^{30,31} Leveraging salient health behavior and patient activation theory and research,^{32,33} various messages were individually tailored in content to each of the following patient variables: specific emotional symptoms (including thoughts of self-harm when endorsed) and/or physical symptoms; depression-related visit agenda (whether or not they intended to discuss depression during the study visit and, if so, whether they specifically planned to discuss depression treatment); views regarding depression causes, societal stigma, and available treatment options; and self-efficacy for communicating with clinicians about mental health issues. The presence of depressive symptoms on PHQ-9, the patient's visit agenda and the patient's view on depression determined the strength and content of messaging.

Attention Control. The control intervention consisted of a brief video regarding sleep hygiene.³⁴

Data Collection

Data were collected at all sites from computer-based patient surveys completed prior to engaging in assigned interventions and immediately after the visit. Additionally, providers completed a brief questionnaire after each patient visit, which included whether or not suicide was discussed during the visit (and who initiated the discussion).

Measures

Survey questions answered by patients included a PHQ-9 to assess baseline depressive symptoms, baseline health status using the SF-12,³⁵ and sociodemographic characteristics including age (in years); gender; race/ethnicity (white non-Hispanic, black non-Hispanic, other race non-Hispanic, or Hispanic [any race]); household income (< \$35,000 or ≥ \$35,000); education level (some high school or less, high school graduate, some college, or college graduate); and practice setting (multispecialty group, health maintenance organization, academic practice, or VA facility). The outcome measure was the clinician's report of whether or not suicide was discussed (yes or no).

To ensure the safety of enrolled patients, procedures were developed to address positive responses to the question regarding thoughts of self-harm in the PHQ-9. If the patient responded positively to the self-harm question on PHQ-9, they were asked a follow-up question to confirm, and the patient's PCP was directly notified of the confirmatory response immediately after the clinic visit. In addition, the research assistant provided to the patient the suicide line telephone numbers in the patient's local calling area.

Statistical Analysis

Descriptive and inferential statistics (mean, median, chi square or one-way analysis of variance) were used to describe the baseline characteristics for the study sample. Suicide discussion was compared in the intervention and control groups using mixed model logistic regression analyses conducted separately by PHQ-9 levels below 10 [no, minimal, or mild depressive symptoms] and greater than or equal to 10 [at least moderate depressive symptoms]. This cut-point was used because those with moderate depressive symptoms are more likely to exhibit suicidal behavior. The key independent variable was the study group assignment (intervention IMCP or PSA vs. control). To facilitate interpretation, results are also reported as marginal effects (adjusted probabilities of suicide inquiry). Analyses adjusted for study strata: gender, race/ethnicity, and site. Mixed effects logistic regression models were used to account for the nesting of patient-level observations within providers. All data were analyzed with Stata 12.1 (Stata Corporation, College Station, TX).

RESULTS

Of the 925 patients randomized, 58 (6.3 %) of these were excluded post-randomization due to withdrawal from the study, being on anti-depressants or missing data resulting from tablet computer failure. A total of 867 patients were included in the final analysis; 286 in the IMCP arm, 287 in the PSA arm and 294 in the control arm (Fig. 1). Demographic characteristics as well as baseline mental and physical health status of all patients in the different study arms are summarized in Table 1. There was one statistically significant difference among the three intervention groups: patients assigned to the PSA had better mental health summary scores (MCS-12) than patients in the other groups (see Table 1). One hundred patients (11 %)

answered positively to the PHQ-9 question about suicidality and 81 (9.3 %) confirmed the presence of suicidal thoughts on a follow-up clarifying question. Of the 81 with confirmed suicidal thoughts, 67 (7.7 % of overall sample) had a PHQ-9 score greater than or equal to 10 and 14 (1.6 % of overall sample) had a PHQ-9 score less than ten (with one patient having a $\text{PHQ-9} \leq 5$). Clinician reported suicide discussion occurred in 260 of the 867 patient encounters (29 %); 139/570 (24 %) of those with no to minimal depressive symptoms and 122/246 (50 %) of those with at least moderate depressive symptoms. Of those endorsing suicidal thoughts that were confirmed with a follow-up question, 49 (60 %) had a suicide discussion by physician report. Clinicians claimed that they initiated the discussion in 233 (26.8 %) encounters and that the patient

Figure 1. Diagram depicting the flow of patients through eligibility, assessment, randomization, intervention and outcome analysis. Three attempts were made for each unsuccessful event.

Table 1. Characteristics of Patients by Study Arm

Characteristic	IMCP Arm (n=294)	PSA Arm (n=286)	Control arm (n=287)	p value
Mean age, years (SD)	51.5 (12.4)	52.1 (11.5)	51.8 (11.5)	0.83
Female sex, N (%)	132 (44.9 %)	127 (44.4 %)	122 (42.5 %)	0.83
Non-Hispanic White	165 (56.1 %)	164 (57.3 %)	157 (54.7 %)	0.97
Non-Hispanic Black	55 (18.7 %)	47 (16.4 %)	53 (18.5 %)	
Hispanic	43 (14.6 %)	40 (14 %)	40 (13.9 %)	
Asian/Pacific Islander	21 (7.1 %)	26 (9.1 %)	24 (8.4 %)	
Other/ Mixed race/ Native American	10 (3.4 %)	9 (3.2 %)	13 (4.5 %)	
College or graduate degree	126 (43.5 %)	123 (43.2 %)	142 (49.7 %)	0.51
Income less than \$35,000	106 (36 %)	110 (38.5 %)	101 (35.2 %)	0.95
Income \$35,000 or more	188 (63.9 %)	176 (61.5 %)	186 (64.8 %)	
Living with spouse or partner	128 (44.1 %)	125 (43.9 %)	121 (42.3 %)	0.89
Baseline health status, mean,(SD)				
MCS-12* (range 0–100)	40.4 (10.3)	43.4 (11.8)	40.8 (12.3)	0.01
PCS-12 (range 0–100)	44.4 (11.62)	46.93 (11.22)	45.9 (11.86)	0.36
# of comorbidities	3.3 (2.04)	3.2 (2.16)	3.3 (1.99)	0.81
Baseline PHQ-9, N (%)				
≤ 4 minimal or no symptoms	72 (24.7 %)	87 (30.7 %)	89 (31.2 %)	0.32
5–9 at least mild symptoms	117 (40.1 %)	112 (39.6 %)	112 (39.3 %)	
≥ 10 at least moderate symptoms	103 (35.3 %)	84 (29.7 %)	84 (29.5 %)	
Thoughts of self-harm (on PHQ-9)	42 (33.9 %)	25(32.9 %)	33(33.1 %)	
Active suicidal ideation confirmed	34(11.8 %)	19(6.6 %)	28(9.8 %)	0.72
Practice site N (%)				
HMO	32 (10.9 %)	30 (10.5 %)	24 (8.4 %)	0.61
Specialty group	121 (41.2 %)	132 (46.2 %)	119 (41.5 %)	
Academic	92 (31.3 %)	87 (30.4 %)	100 (34.8 %)	
VA	49 (16.7 %)	37 (12.9 %)	44 (15.3 %)	

*MCS-12 mental health summary measures from SF-12 short form health survey; PCS-12 physical health summary measures from SF-12 short form health survey

initiated the discussion in 27 (3 %) encounters. The clinician report of whether suicide was discussed was missing in 51 (6 % of overall sample) encounters. Suicide discussion was significantly more likely to take place if the chief complaint was an acute mental health complaint or chronic mental health problem rather than a non-mental health complaint, but the effect of the intervention did not significantly differ by chief complaint. There were no statistically significant differences in baseline characteristics (i.e., those shown in Table 1) between those whose providers completed and those who did not complete the clinician report.

The results of the logistic regression analyses are summarized in Table 2. Among the group with no or minimal depressive symptoms (PHQ-9≤9), there was no significant effect on suicide discussion among patients assigned to the IMCP or PSA (as compared with control). Among patients with at least moderate depressive symp-

toms (PHQ-9≥10), the IMCP intervention was associated with significantly more suicide discussion than control (adjusted odds ratio [AOR] 2.3, 95 % confidence interval [CI] 1.1–5.1, $p=0.03$), (Table 2). There were no statistically significant effects of the PSA on suicide discussion at either PHQ-9 level compared with control. Translating the AORs into predictive marginal effects, the adjusted probability of patient–physician suicide discussion among those with a PHQ-9 greater than or equal to 10 was 40 % (95 % CI=27–53 %) in controls, 51 % (95 % CI=37–65 %) in the PSA intervention group and 58 % (95 % CI=46 %–70 %) in the IMCP group (Fig. 2).

Table 2. Effects of Interventions (PSA and IMCP vs. Attention Control) on Physician-Reported Inquiry into Suicide Thoughts by Degree of Depressive Symptoms

	None or few depressive symptoms (PHQ-9 0–9)		At least moderate depressive symptoms (PHQ-9 ≥ 10)	
Intervention	AOR	95 % CI	AOR	95%CI
IMCP	0.92	0.50–1.71	2.33	1.06–5.10
PSA	0.70	0.38–1.32	1.65	0.70–3.88

AOR adjusted odds ratio, CI confidence intervals, covariates adjusted for include gender, race and performance site

Figure 2. Predicted probability (95 % confidence intervals) of suicide inquiry by intervention group and PHQ-9 level.

DISCUSSION

This randomized control trial examined the effects of two different patient-focused depression engagement interventions—a targeted PSA and a tailored IMCP—on PCP discussion of suicidal thoughts with patients. We found that, compared with patient exposure to control, exposure to the IMCP was associated with an 18 percentage point gain in the likelihood of discussing suicidal thoughts in the stratum of patients with at least moderate depressive symptoms ($\text{PHQ-9} \geq 10$). There were no significant effects in those with mild, minimal, or no depressive symptoms ($\text{PHQ-9} \leq 9$), an expected finding, given their low suicidality risk.²⁶

We believe that the intervention operates on the patients' willingness to initiate and participate in depression-related discussion, thereby making the clinician more comfortable about inquiring about suicidal thoughts in their patients. Recalling the barriers to suicide discussion and re-examining the theory-driven structure of the IMCP can help to explain this effect on clinician discussion regarding suicidal thoughts. The IMCP delivered messages tailored to various patient-related variables: 1) pre-visit PHQ-9 ; 2) visit agenda (whether or not the patient planned on discussing depressive symptoms or treatment during the visit); and 3) patient responses during the interactive computer program. At the first step, a stronger message to discuss depressive symptoms with the clinician was delivered to those with PHQ-9 of five or greater. Next, the patient's visit agenda determined the strength of the message. Lastly, specific patient-triggered responses relating to treatment preferences, perceived causes of depression and personal views of depression (including stigma) affected the delivered message. During this last step, the intervention used the patient's responses (prior knowledge, views/stigma, treatment preferences, and self-efficacy) to validate the patient's views and to increase the patient's receptiveness to discussion about diagnosis, disclosure of symptoms and treatment.

Of note, in this study, patient activation occurred without directly addressing clinician factors. Conversely, prior studies have focused on affecting clinician behavior by increasing clinician awareness, increasing clinician support or providing a treatment algorithm. These interventions had only modest effects. Additionally suicidal thoughts and behaviors lead to suicidal attempts and completed suicides through complex pathways with several influencing factors; patient–physician communication is only one relevant factor. Prior studies have shown that clinician factors such as personal experience of depression and practice setting^{20,21} influence discussion of suicide, and that clinicians may be more likely to discuss suicide in patients who are not endorsing suicide.³⁶ Notably, PCPs report that they initiated suicide discussion nine times as often as often as they report that the patient initiated the discussion (26.8 %

vs. 3 %). This may reflect prompting from the patient in response to the intervention. Given the dearth of interventions that improve communication about suicide between patients and PCPs, the findings may represent an important step towards the goal of suicide prevention. Patients at risk for suicide can be activated to discuss suicidal ideation, to prompt PCPs to inquire about suicide, and to signal their openness to discussion of suicide or treatment. Such an approach could identify those at risk in the primary care setting and direct them to research-proven treatments. Whether combined patient and clinician interventions would have cumulative benefits needs examination.

The study had limitations. Although this was a regional multi-center trial, it involved a selected sample of patients, potentially limiting the generalizability of the findings. The intervention also occurred only once, and its long-term effects are unknown. The analysis also relied on clinician self-report; though this measure was independent of the patient-focused intervention. It should be noted that other clinician factors such as clinician prior experiences, attitudes and personality may have affected this behavior, although this is mitigated by examination of the results by clinicians. Additionally, certain factors such as post-visit questionnaires or observer bias may have increased the baseline rate of suicide inquiry. However, this would have affected all three arms. Finally, it is uncertain how physician discussion translates into suicide prevention. Future studies may examine the actual discussion quality.

In summary, this study examined the effects of targeted and tailored health messaging on patient–physician discussion of suicidal thoughts. Research is needed to confirm these findings, and future studies should be conducted examining the effects of different health care settings on clinician suicide inquiry, as well as combined patient and clinician interventions. More research is also needed to inform the structure and specific targets of health messaging interventions in the treatment of depression and suicide prevention. Overall, our findings suggest that the IMCP may have a role in depression treatment and suicide prevention programs. The relative ease of the IMCP's implementation in the primary care setting makes it a potentially powerful tool with significant dissemination potential. Given the lack of interventions that have produced an actual increase in the rates of PCP suicide inquiry, these findings have potentially far-reaching implications with significant public health impact.

Funding: The work was supported by grant 1R01MH079387 from the National Institute of Mental Health.

Role of the Funding Source: The funder had no role in the design and conduct of the study; collection, management, analysis, and interpretation of data; or preparation, review, or approval of the manuscript.

Conflict of Interest: The authors declare that they do not have a conflict of interest.

Corresponding Author: Ruby Shah, MD, MPH; UC Davis Division of General Medicine and Center for Healthcare Policy and Research, 4501 X Street, Sacramento, CA 95817, USA (e-mail: ruby.shah@ucdmc.ucdavis.edu).

REFERENCES

1. CDC. Injury Center: violence prevention. 2009; <http://www.cdc.gov/violenceprevention/suicide/statistics/index.html>. Accessed March 6, 2014.
2. WHO. WHO global health observatory—suicide deaths. 2013; http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/. Accessed March 6, 2014.
3. Kessler RC, Berglund P, Demler O, et al. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA* 2003;289(23):3095–3105.
4. Cooper J, Kapur N, Webb R, et al. Suicide after deliberate self-harm: a 4-year cohort study. *Am J Psychiatry*. 2005;162(2):297–303.
5. Milner A, Svetcic J, De Leo D. Suicide in the absence of mental disorder? A review of psychological autopsy studies across countries. *Int J Soc Psychiatry*. May 11 2012.
6. Yoshimasu K, Kiyohara C, Miyashita K. Suicidal risk factors and completed suicide: meta-analyses based on psychological autopsy studies. *Environ Health Prev Med*. 2008;13(5):243–256.
7. Cavanagh JT, Carson AJ, Sharpe M, Lawrie SM. Psychological autopsy studies of suicide: a systematic review. *Psychol Med*. 2003;33(3):395–405.
8. Luoma JB, Martin CE, Pearson JL. Contact with mental health and primary care providers before suicide: a review of the evidence. *Am J Psychiatry*. 2002;159(6):909–916.
9. Vassilas CA, Morgan HG. General practitioners' contact with victims of suicide. *BMJ*. 1993;307(6899):300–301.
10. Bostwick JM, Rackley S. Addressing suicidality in primary care settings. *Curr Psychiatr Rep*. 2012;14(4):353–359.
11. Mann JJ, Apter A, Bertolote J, et al. Suicide prevention strategies: a systematic review. *JAMA* 2005;294(16):2064–2074.
12. DHHS S-. National strategy for suicide prevention: goals and objectives. 2001; www.sprc.org/library/nssp.pdf. Accessed March 6, 2014.
13. Gunnell D, Metcalfe C, While D, et al. Impact of national policy initiatives on fatal and non-fatal self-harm after psychiatric hospital discharge: time series analysis. *Br J Psychiatry J Ment Sci*. 2012;201(3):233–238.
14. Uncapher H, Arean PA. Physicians are less willing to treat suicidal ideation in older patients. *J Am Geriatr Soc*. 2000;48(2):188–192.
15. Kaplan MS, Adamek ME, Calderon A. Managing depressed and suicidal geriatric patients: differences among primary care physicians. *Gerontologist*. 1999;39(4):417–425.
16. Frankenfield DL, Keyl PM, Gielen A, Wissow LS, Werthamer L, Baker SP. Adolescent patients—healthy or hurting? Missed opportunities to screen for suicide risk in the primary care setting. *Arch Pediatr Adolesc Med*. 2000;154(2):162–168.
17. Milton J, Ferguson B, Mills T. Risk assessment and suicide prevention in primary care. *Crisis*. 1999;20(4):171–177.
18. Nutting PA, Dickinson LM, Rubenstein LV, Keeley RD, Smith JL, Elliott CE. Improving detection of suicidal ideation among depressed patients in primary care. *Ann Fam Med*. 2005;3(6):529–536.
19. Zisook S, Anzia J, Atri A, et al. Teaching evidence-based approaches to suicide risk assessment and prevention that enhance psychiatric training. *Compr Psychiatry*. Sep 17 2012.
20. Feldman MD, Franks P, Duberstein PR, Vannoy S, Epstein R, Kravitz RL. Let's not talk about it: suicide inquiry in primary care. *Ann Fam Med*. 2007;5(5):412–418.
21. Vannoy SD, Fancher T, Meltvedt C, Unutzer J, Duberstein P, Kravitz RL. Suicide inquiry in primary care: creating context, inquiring, and following up. *Ann Fam Med*. 2010;8(1):33–39.
22. Bell RA, Franks P, Duberstein PR, et al. Suffering in silence: reasons for not disclosing depression in primary care. *Ann Fam Med*. 2011;9(5):439–446.
23. Inskip HM, Harris EC, Barraclough B. Lifetime risk of suicide for affective disorder, alcoholism and schizophrenia. *Br J Psychiatry J Ment Sci*. 1998;172:35–37.
24. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16(9):606–613.
25. Blair-West GW, Cantor CH, Mellsop GW, Eyeson-Annan ML. Lifetime suicide risk in major depression: sex and age determinants. *J Affect Disord*. 1999;55(2–3):171–178.
26. Blair-West GW, Mellsop GW, Eyeson-Annan ML. Down-rating lifetime suicide risk in major depression. *Acta Psychiatr Scand*. 1997;95(3):259–263.
27. O'Connor E, Gaynes BN, Burda BU, Soh C, Whitlock EP. Screening for and treatment of suicide risk relevant to primary care: a systematic review for the U.S. preventive services task force. *Ann Intern Med*. Apr 23 2013.
28. Tancredi DJ, Slee CK, Jerant A, et al. Targeted versus tailored multimedia patient engagement to enhance depression recognition and treatment in primary care: randomized controlled trial protocol for the AMEP2 study. *BMC Health Serv Res*. 2013;13(1):141.
29. Kravitz RL, Franks P, Feldman MD, et al. Patient engagement programs for recognition and initial treatment of depression in primary care: a randomized trial. *JAMA* 2013;310(17):1818–1828.
30. Kravitz RL, Epstein RM, Bell RA, et al. An academic-marketing collaborative to promote depression care: a tale of two cultures. *Patient Educ Couns*. 2013;90(3):411–419.
31. Jerant A, Sohler N, Fiscella K, Franks B, Franks P. Tailored interactive multimedia computer programs to reduce health disparities: opportunities and challenges. *Patient Educ Couns*. 2011;85(2):323–330.
32. Kreuter MW, Skinner CS. Tailoring: what's in a name? *Health Educ Res*. 2000;15(1):1–4.
33. Ryan GL, Skinner CS, Farrell D, Champion VL. Examining the boundaries of tailoring: the utility of tailoring versus targeting mammography interventions for two distinct populations. *Health Educ Res*. 2001;16(5):555–566.
34. Epstein A. Common sleeping problems. *HealthNation*. 2011.
35. Ware J Jr, Kosinski M, Keller SD. A 12-item short-form health survey: construction of scales and preliminary tests of reliability and validity. *Med Care*. 1996;34(3):220–233.
36. Vannoy SD, Robins LS. Suicide-related discussions with depressed primary care patients in the USA: gender and quality gaps. A mixed methods analysis. *BMJ Open*. 2011;1(2), e000198.