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Improvements in functional disability after psychotherapy for depression are associated with reduced suicide ideation among older adults

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Abstract

Objectives: To evaluate the association between changes in functional disability and suicide ideation among older adults following psychotherapy for depression.

Methods: Sixty-five participants (65-91-years old, 72% White, and 66% female) with depression completed 12 sessions of Problem Solving Therapy and completed measures of disability (WHO

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Author Contributions

J. Lutz conceptualized the research question, conducted primary analyses, and drafted the manuscript. R.S. Mackin designed and coordinated the original study and assisted with drafting the manuscript. M.C. Otero conducted analyses and assisted with drafting the manuscript. R. Morin, D. Bickford, D. Tosun, D.D. Satre, and J.C. Nelson were involved in conducting the original study and assisted with drafting the manuscript. C.E. Gould assisted with drafting the manuscript. S.A. Beaudreau oversaw primary analyses and drafting the manuscript.

Results from this study were presented as a symposium paper at the Gerontological Society of America Annual Scientific Meeting November 17, 2019 in Austin, TX.

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Disability Assessment Schedule 2.0) and suicide ideation (Geriatric Suicide Ideation Scale [GSIS]) at baseline and posttreatment.

Results: Hierarchical linear regressions found that reductions in functional disability were associated with overall reductions in suicide ideation on the GSIS ($F[4,60] = 4.06, p < .01$), particularly with the Loss of Worth GSIS subscale ($F[4,60] = 7.86, p < .001, R^2 = .344$).

Conclusions: Results suggest decreased functional disability following depression treatment is associated with decreased suicide ideation, especially thoughts regarding loss of worth. These results highlight the potential for treatments that reduce functional disability (e.g., PST) to reduce risk of suicide among older adults.

Keywords

geriatric; disability; suicide ideation; loss of worth; psychotherapy; problem solving therapy

Objective

Suicide is a significant public health priority for older adults, who exhibit the highest suicide rates around the world.(1) In this population, functional disability has been identified as a significant factor associated with greater risk and severity of suicide ideation.(2) Older adults are most likely to experience functional disability (difficulties carrying out life activities), with about one-third of those age 65 and older, and more than two-thirds of those age 85 and older, experiencing disability.(3) Functional disability could contribute to vulnerability to suicide via changes in psychosocial functioning, such as increased depression, or heightened feelings of perceived burdensomeness or thwarted belongingness (major factors contributing to suicide ideation in the Interpersonal Theory of Suicide).(4, 5) Experts in late-life suicide have proposed that functional disability is a more distal risk factor for perceived burdensomeness, which itself is the more proximal risk factor for suicide ideation.(5)

Despite the prevalence of suicide on the older population, there has been little research attention to treatments to reduce suicide risk in older adults.(6) Psychotherapies may indirectly help to reduce suicide ideation via improvements in late-life depression and functioning, both significant risk factors in this population.(5) For example, Problem Solving Therapy (PST) has shown promise in reducing disability among older adults with depression,(7) and in reducing suicide ideation,(6) though prior studies have not examined how specific improvements associated with PST might be associated with late-life suicide ideation over time. Though PST does not directly target functional disability, it intends to improve adaptive coping, and therefore may improve functional ability indirectly.

The purpose of this study was to examine whether reductions in functional disability were associated with reductions in suicide ideation in a sample of older adults completing 12 weeks of PST for depression. We hypothesized that in adjusted analyses, decreased functional disability would be significantly associated with decreased suicide ideation.

Methods

Participants & Procedure

Participants included community-dwelling adults age 65 and older. Inclusion criteria were: current diagnosis of unipolar Major Depressive Disorder without psychotic features, with a 24-item Hamilton Depression Rating Scale (HAMD) total score ≥ 19 , and current depressive episode lasting at least six weeks. A licensed clinical psychologist made diagnoses using DSM-IV criteria. Participants with other Axis I disorders, significant current neurologic illness, or diagnoses or evidence of dementia (<25 on the Mini Mental Status Exam) were excluded. Because the study was not a randomized control trial, there was no control condition. Eligible participants completed baseline assessment measures including current suicidal ideation and measures of disability. Participants then participated in 12 weeks of individual PST (60 minutes per week). After therapy concluded, a follow-up assessment was conducted with duplicate measures for baseline comparison.

Measures

The Geriatric Suicide Ideation Scale (GSIS) is a 31-item self-report measure of suicide-related thoughts developed for use with older adults that has demonstrated good internal consistency, test-retest reliability, and construct validity.⁽⁸⁾ Thirty items contribute to four subscales – Suicide Ideation (SI), Death Ideation (DI), Perceived Meaning in Life (PM; reverse-coded), and Loss of Worth (LW) – and one additional item assesses past suicidal behavior. Total scores range from 31 to 155 (subscale score ranges: Suicide Ideation = 10-50, Death Ideation = 5-25, Perceived Meaning = 8-40, Loss of Worth = 7-35), with higher scores indicative of greater severity of suicide-related thoughts.

The World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0), a widely-used 12-item self-report measure, assesses mobility, daily activity, cognitive, emotional, and social functioning, with good internal reliability and construct validity.⁽⁹⁾ Scores range from 0 to 48, with higher scores indicative of greater functional disability.

Statistical Analyses

Change in functional disability and suicide ideation were calculated by subtracting baseline score from posttreatment score. Positive change scores indicate an increase in disability or suicide ideation, and negative change scores indicate a decrease. These change scores were calculated for WHODAS 2.0 total score, GSIS total score, and each GSIS subscale. Single-sample t-tests assessed whether changes were significantly different from zero.

A multiple linear regression analysis examined the unique variance in suicide ideation change associated with change in functional disability after adjusting for age and baseline scores. We did not covary depression scores, because functional disability and suicide ideation in this sample have been demonstrated to be associated, independent of depression scores.⁽¹⁰⁾ Using a hierarchical approach, age was entered into the first step, followed by baseline GSIS total score and baseline WHODAS score entered in steps 2 and 3, and then finally, change in WHODAS in step 4. If change in WHODAS was significant, then we conducted follow-up analyses with each GSIS subscale as the dependent variable.

Results

Sixty-five older adults, age 65 to 91 years ($M_{\text{age}} = 71.57$, $SD = 6.19$), were included in the sample. Participants were 86% Non-Hispanic or Latino, 72% White, and 66% female, with an average of 16.5 years of education. Participants scored 25.40 on average ($SD = 3.97$) on the HAMD at baseline and 14.08 ($SD = 7.30$) posttreatment. On average, functional disability significantly decreased from baseline to posttreatment ($M_{\text{blWHODAS}} = 12.14$, $SD = 7.68$, range = 0-31; $M_{\text{WHODAS}} = -2.28$, $SD = 4.81$, $t(64) = -3.81$, $p < .001$, range -13-7), as did GSIS total and subscale scores (see Table 1).

Change in functional disability significantly predicted change in GSIS after adjusting for age, baseline GSIS, and baseline disability (see Table 1). Therefore, we conducted regression analyses with the GSIS subscales, resulting in similarly significant models. Table 1 presents individual parameters and details of change in F and R^2 estimates with each hierarchical model. Change in functional disability significantly predicted change in Suicide Ideation and Loss of Worth subscales after adjusting for age and baseline scores. Change in functional disability accounted for approximately 12% of unique variance in severity of suicide-related thoughts (GSIS total scores), 7% in the Suicide Ideation subscale, and 14% in Loss of Worth. Change in disability was not significantly associated with Perceived Meaning or Death Ideation subscale changes.

Conclusions

Changes in functional disability over the course of psychotherapy were significantly associated with changes in suicide ideation among older adults with depression. Specifically, the largest association was attributable to changes in the GSIS subscale of Loss of Worth, with functional disability accounting for approximately 14% of unique variance in Loss of Worth. Notably, four of six items on the GSIS Loss of Worth subscale are similar in content to the construct of perceived burdensomeness, though this subscale also includes two broader items. Perceived burdensomeness consists of the subjective feeling of being a burden on others, even to the extent of feeling that others would be better off if one was dead; it also encompasses thoughts or feelings of self-hatred.(4) One of six items on the GSIS LW subscale directly assesses the respondent's feeling of being a constant burden to his or her family, while three other items assess feelings of uselessness, worthlessness, and being unable to help oneself or others – all consistent with perceived burdensomeness. It is plausible that functional disability would contribute to vulnerability in this particular construct, as those with physical illnesses or disabilities may be less independent and require greater assistance from others. This aligns with theoretical frameworks of functional disability as a distal suicide risk factor that contributes to the more proximal risk factor of perceived burdensomeness.(5)

Limitations should be noted. First, this study lacked a control condition, therefore precluding any analyses or conclusions regarding the effects of the PST treatment compared with other treatments. However, the results implicate the potential value for research into interventions that reduce functional disability, and add to previous data that support reductions of disability among those who participate in PST.(7) Additional research should examine the

potential long-term benefits of reductions in functional disability following PST on future need for intensive healthcare services. Second, the sample in this study is relatively small and homogeneous (majority non-Hispanic White female). With a larger, more diverse sample and greater statistical power, parameter and effect size estimates may be considered more stable, further associations between functional disability and other subscales on the GSIS may be detected, and the current results generalized. Third, these analyses did not control for severity of depressive symptoms; future research can more thoroughly investigate the role of depressive symptoms in this association. Fourth, the abbreviated 12-item WHODAS does not provide subscales on individual functional domains. Future studies using the 36-item WHODAS would be poised to examine functional domains in relation to GSIS subscales. Finally, given the design of this study, analyses are correlational, and the direction of causation between changes in functional disability and suicide ideation cannot be determined.

Despite these limitations, this investigation provides preliminary support for the hypothesis that interventions that reduce functional disability in older adults with depression may be effective in also reducing suicide ideation. Longitudinal studies of older adults recovering from functional impairments, as well as controlled trials directly examining the effects of PST and other interventions that improve functioning on late-life suicide ideation, are needed.

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Highlights

- Are changes in functional disability observed from pre- to post-treatment among older adults receiving Problem Solving Therapy (PST) for depression associated with changes in suicide ideation?
- Reductions in functional disability are associated with reductions in suicide ideation, particularly feelings of loss of worth.
- Interventions, such as PST, that have been shown to reduce disability may also be effective in reducing risk for suicide in older adults, but direct controlled trials are needed.

Table 1:

Hierarchical regression analyses of association between functional disability and GSIS total and subscale scores

	Age (β)	bIGSIS ^a (β)	bIWHODAS (β)	WHODAS (β)	F(df)	R ²
<i>GSIS Total</i>						
(baseline range = 40-152, M = 73.52, SD = 22.64; GSIS Total range = -41-11, M = -10.18, SD = 11.04, $t(64) = -7.44^{***}$)						
Step 1	-.107				0.73 (1,63)	.011
Step 2	-.106	-.075			0.36 (1,62)	.006
Step 3	-.230	-.171	.326*		5.51 (1,61)*	.081
Step 4	-.212	-.251*	.445**	.362**	8.74 (1,60)**	.115
F(4,60) = 4.06**, R ² = .213						
<i>Suicide Ideation</i>						
(baseline range = 10-49, M = 20.23, SD = 8.07; Suicide Ideation range = -15-8, M = -2.92, SD = 4.37, $t(64) = -5.40^{***}$)						
Step 1	-.055				0.19 (1,63)	.003
Step 2	-.053	-.282*			5.37 (1,62)*	.079
Step 3	-.135	-.343**	.214		2.45 (1,61)	.035
Step 4	-.121	-.400**	.302*	.272*	4.75 (1,60)*	.065
F(4,60) = 3.35*, R ² = .183						
<i>Perceived Meaning</i>						
(baseline range = 8-38, M = 20.14, SD = 5.17; Perceived Meaning range = -16-7, M = -2.31, SD = 4.17, $t(64) = -4.46^{***}$)						
Step 1	-.016				.02 (1,63)	.000
Step 2	-.010	-.149			1.40 (1,62)	.022
Step 3	-.152	-.232	.378**		8.12 (1,61)**	.115
Step 4	-.137	-.276*	.450**	.238	3.69 (1,60)	.050
F(4,60) = 3.45*, R ² = .187						
<i>Loss of Worth</i>						
(baseline range = 8-34, M = 20.20, SD = 5.19; Loss of Worth range = -15-4, M = -3.66, SD = 3.96, $t(64) = -7.46^{***}$)						
Step 1	-.146				1.38 (1,63)	.021
Step 2	-.165	-.283*			5.49 (1,62)*	.080
Step 3	-.316*	-.401**	.370**		7.88 (1,61)**	.103
Step 4	-.296*	-	.481***	.394**	12.79 (1,60)**	.140
.450***						
F(4,60) = 7.86***, R ² = .344						
<i>Death Ideation</i>						
(baseline range = 5-25, M = 11.20, SD = 5.69; Death Ideation range = -11-4, M = -1.12, SD = 2.79, $t(64) = -3.24^{**}$)						
Step 1	-.082				0.42 (1,63)	.007
Step 2	-.067	-.230			3.47 (1,62)	.053

	Age (β)	bIGSIS ^a (β)	biWHODAS (β)	WHODAS (β)	F(df)	R ²
Step 3	-.174	-.298 *	.291 *		4.72 (1,61) *	.068
Step 4	-.164	-.338 *	.340 *	.150	1.35 (1,60)	.019
					F(4,60) = 2.57 *, R ² = .146	

Note. Statistics for final, full model are presented below the change statistics for each hierarchical step. For tests of significance of β s, Step 1 df = 63, Step 2 df = 62, Step 3 df = 61, and Step 4 df = 60. “bl” = baseline; “ ” = change, “ β ” = standardized beta parameter.

^a“bIGSIS” refers to the baseline level of whichever scale or subscale is being used as the outcome.

*
 $p < .05$

**
 $p < .01$

 $p < .001$