



The Role of Cognitive Functioning and Distress in Suicidal Ideation in Older Adults

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OBJECTIVES: To evaluate the role of cognitive functioning and other clinical and demographic characteristics as potential predictors of suicidal ideation in older primary care patients.

DESIGN: Cross-sectional.

SETTING: Primary care clinics at three Department of Veterans Affairs Medical Centers, three community health centers, and two hospital networks.

PARTICIPANTS: Fifteen thousand five hundred ninety older adults without dementia who were receiving primary care (mean age \pm standard deviation 74.0 \pm 6.4; 62.8% men).

MEASUREMENTS: Hierarchical logistic regressions were conducted with passive (e.g., thoughts of being better off dead) and active (e.g., thoughts of hurting one self) suicidal ideation as outcome variables. All demographic variables (age, sex, marital status, and ethnicity) were entered in the first block. All clinical variables (distress, cognitive functioning, alcohol consumption, and perceived health) were entered in the second block.

RESULTS: In addition to the typical demographic predictors of late-life suicide (age, marital status, and ethnicity), having poorer cognitive functioning, poorer health, and greater mental distress were associated with passive suicidal ideation (χ^2 (14, $n = 14,618$) = 1,192.12, $P < .001$). Younger age, female sex, poorer cognitive functioning, and greater mental distress were associated with active suicidal ideation (χ^2 (14, $n = 14,605$) = 205.35, $P < .001$).

CONCLUSION: Distress and cognitive impairment are the only two variables that consistently predicted passive and active suicidal ideation. Primary care providers who work with older adults need to take both into consideration when evaluating suicidal ideation. *J Am Geriatr Soc* 2007.

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Old age has consistently been shown to be a risk factor for completed suicide, with those aged 65 and older having the highest suicide rate in the country.¹ Furthermore, research has shown that suicide attempts by older adults are more likely to result in complete suicide than attempts made by younger adults.² In older adults, past suicide attempts, feelings of hopelessness, depression, the absence of social support, comorbid medical conditions, and to a lesser degree alcohol problems have all been shown to be associated with suicidal ideation, thoughts of death, and completed suicide.³⁻⁶ Although a large body of literature has focused on depression as a risk factor for suicide,^{3,4} the role of cognitive functioning in suicidal ideation and attempts in older adults has not been adequately explored. Given that late-life depression is frequently associated with mild cognitive impairment,^{7,8} mild cognitive impairment is highly prevalent in older adults,^{8,9} and cognitive impairments have been shown to be associated with suicidal ideation and attempts in younger people,¹⁰⁻¹² it is important to explore the potential link between late-life suicide and cognitive impairments.

A few studies have attempted to determine whether such a link exists, although the research has relied on small sample sizes and has primarily employed case-control designs. The research has thus been inconclusive, resulting in inconsistent findings, with some studies suggesting that cognitive impairments may be associated with greater frequency of suicidal ideation^{13,14} and other studies reporting no such a relationship.¹⁵⁻¹⁷

The present study was unique because it evaluated predictors of suicidal ideation in a large sample of older adults receiving primary care, a group that has been shown to have a high risk for suicide.¹⁸ This study used a cognitive screening measure to identify the role of cognitive functioning as a predictor of suicidal ideation. Based on previous research, it was hypothesized that mental distress and

cognitive functioning would be associated with higher levels of suicidal ideation.

METHODS

Participants

The Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) Study is a multisite randomized trial comparing two types of care models for delivery of mental health services to older adults through primary care. The study sites include five Department of Veterans Affairs Medical Centers (VAMCs; 19,304 participants, 70% of the sample; 14 primary care clinics), three community health centers (CHCs; 3,502 participants, 12.7% of the sample; nine primary care clinics), and two hospital networks (4,688 participants, 17% of the sample; 11 primary care clinics). All institutional review boards approved the study, and all participants signed an informed consent. Cross-sectional data consisted of the mental health screening phase, which included a suicide screen, an alcohol screen, a general mental distress screen, and an anxiety screen. (Because the anxiety screen was administered only at the VA sites, this measure was not used in the present study.) Two of the VAMCs (9,721 participants, 35% of the sample; six primary care clinics) did not screen patients in the clinics but instead used a mail screener and thus could not include a cognitive measure in their screening procedure. Data from these two sites were excluded from the analyses.

Because of ethical issues associated with receiving consent from older adults with dementia, all participants who had a cognitive score greater than 16 (indicating the potential presence of dementia) were excluded from the study and did not complete any of the other screens ($n = 587$, 3.7%). The excluded group was significantly different from the remaining of the sample on all demographic and clinical characteristics.

Measures

Trained research assistants conducted the screening, which lasted approximately 15 minutes, in person or over the telephone.

Outcome Variables

To assess passive and active suicidal ideation, participants were asked the following question: "In the last 2 weeks, have you thought that you are better off dead?" (passive ideation) and "In the last 2 weeks, have you had thoughts of hurting yourself in some way?" (active ideation). Responses to the two questions were recorded as a dichotomized answer "Yes" or "No." These were two independent questions previously used in primary care studies to assess suicidality.¹⁹ Questions were not part of any of the other screens in the present study.

Predictor Variables

Cognitive functioning was assessed using the Short Orientation Memory Concentration Test (SOMCT),²⁰ a six-item measure consisting of questions that assess orientation to time, recall of a short phrase, and two working memory tasks of backward counting and reciting the months in reverse order that has shown good ability to discriminate be-

tween different levels of cognitive functioning. The measure has good sensitivity (69%) and specificity (90%).²¹ Scores range between 0 and 28, with higher scores indicating greater cognitive impairment. In the present study, a score of 16 and higher was considered indicative of dementia. Trained interviewers administered this measure. Scores were dichotomized to represent individuals with no cognitive impairment (SOMCT score ≤ 10) and those with cognitive impairment (SOMCT score > 10).

Mental distress was assessed using the 12-item General Health Questionnaire (GHQ-12),²² a measure to assess the presence of mental distress that asks about depressive symptoms, such as concentration and sleep problems, decision-making ability, ability to enjoy everyday activities, depression, happiness, and sense of worthlessness. It also evaluates strain, problem-solving ability, and general confidence. The measure has good reliability and validity and has been used extensively in research studies. In this study, alpha was 0.93. Because research has shown that a GHQ-12 score indicative of psychological distress differs across samples, in the present study, a site-specific cutoff score was established based on pilot data obtained in each site. Cutoff scores ranged from 1 to 3 across sites, with the majority of sites using 3 as a cutoff.²³ Using site-specific cutoffs, we created a binary variable of distressed versus not distressed individuals.

Following the parent study that used NIAAA criteria for moderated drinking in older people, those with a drinking problem were defined as having seven or more drinks per week or at least four or more drinks on a single day more than twice within a 3-month period.^{23,24} A binary variable was created representing those with a drinking problem versus those with no problem.

Perceived health status was assessed using the question, "In general, how would you rate your health?" Response options ranged from 1 = excellent to 5 = poor.

Demographic predictors included age, sex, marital status, and ethnicity.

Analysis

Descriptive statistics and bivariate analyses were first run with passive and active suicidal ideation as outcome variables. To assess for multicollinearity, a correlation matrix of all independent variables was calculated. Hierarchical logistic regressions were then conducted with demographic variables (age, sex, marital status, ethnicity) entered in the first block and clinical variables (mental distress, perceived health status, alcohol problems, cognitive impairment) entered in the second block. Outcome variables were passive and active suicidal ideation.

RESULTS

Fifteen thousand five hundred ninety older adults receiving primary care were screened at the nine study sites. The sample was primarily white (69.0%), male (62.8%), and married or living with a partner (60.0%). One thousand two hundred nineteen (7.8%) were cognitively impaired, 2,791 (17.9%) met the cutoff for mental distress, and 995 (6.4%) met the cutoff for drinking problems. Overall, 5.1% of the sample reported passive suicidal ideation, and 0.6%

reported active suicidal ideation (Table 1). A correlation matrix suggested no evidence of multicollinearity.

Passive Suicidal Ideation

In the first step of the hierarchical logistic regression model, age, sex, ethnicity, and marital status were significant predictors of passive suicidal ideation ($\chi^2(7, n = 14,617) = 62.97, P < .001$). In the second step, the clinical variables were entered into the model. Older age, being white (rather than black or Latino), being unmarried, greater mental distress, greater cognitive impairment, and poorer health status were significant predictors of passive suicidal ideation ($\chi^2(14, n = 14,617) = 1,192.12, P < .001$; Table 2).

Active Suicidal Ideation

The demographic variables were entered into the first block. Sex and age were significant predictors of active suicidal ideation ($\chi^2(7, n = 14,604) = 21.96, P = .003$). Next, the clinical variables were entered into the model. Younger age, female sex, greater mental distress, and poorer cognitive functioning were significant predictors of active suicidal ideation ($\chi^2(14, N = 14,604) = 205.35, P < .001$; Table 2).

DISCUSSION

The present study evaluated predictors of active and passive suicidal ideation in a large sample of older primary care patients. A total of 5.1% of the sample reported passive suicidal ideation, and 0.6% reported active suicidal ideation. This rate of passive suicidal ideation is almost identical to the rate of suicidal ideation found in a different depressed primary care sample of older adults.¹⁶ Suicidality was evaluated in a similar way in both studies. The difference between the two studies is in the findings; the current study found a rate of passive suicidal ideation of 5.1% in a mixed

sample that included individuals with and without mental illness, whereas the previous study¹⁶ estimated this rate in a depressed sample. Its estimation of suicidal ideation in the general population of older primary care patients was similar to the much lower rate of active suicidal thoughts found in the present study. The fact that the current study included a large representation of VA patients, who often present with complex medical and mental health problems,^{25,26} could account for these differences.

Similar to previous research, distress was identified as the strongest predictor of active and passive suicidal ideation.^{3,4} The only other variable that consistently predicted active and passive suicidal ideation was greater cognitive impairment. This finding is consistent with data from case-control research and small-scale cross-sectional designs.^{13,14} Based on the present study, it appears that distressed patients and patients with cognitive impairment are at a greater risk for suicidality and thus should be viewed as a high-risk group.

Impaired decision-making has been identified as a potential factor responsible for suicide attempts in past research.¹⁰ This could explain the higher rates of suicidal ideation found in older adults with cognitive impairment in the present study, although cognitive impairment was a stronger predictor of active than passive suicidal ideation. This may suggest a distinction between the two types of suicidal ideation. Future research geared toward further evaluation of the specific role of certain cognitive functions, such as planning ability, decision-making, and impulsivity in relation to active and passive suicidal ideation is warranted.

Older adults were more likely to report passive and less likely to report active suicidal ideation. This could be because of reluctance of older adults to acknowledge active suicidal ideation because of stigma. It is possible that older adults openly acknowledged more "acceptable" forms of suicidal ideation (passive ideation), and acknowledge less-acceptable

Table 1. Demographic and Clinical Predictors According to Passive and Active Suicidal Ideation*

Characteristic	Total Sample	Passive Ideation	No Ideation	P-Value	Active Ideation	No Ideation	P-Value
Age, mean ± standard deviation	74.0 ± 6.4	74.9 ± 6.8	74.1 ± 6.3	.001	72.4 ± 5.2	74.0 ± 6.4	.001
Female, n (%)	5,432 (34.8)	273 (35.2)	5,094 (35.6)	.82	24 (26.1)	5,330 (35.6)	.07
Married/partnered, n (%)	9,372 (60.1)	393 (49.6)	8,889 (60.9)	<.001	54 (56.8)	9,219 (60.3)	.53
Ethnicity, n (%)							
White	10,784 (69.2)	528 (66.8)	10,197 (70.0)	.009	55 (58.5)	10,667 (70.0)	.12
Black	1,783 (11.4)	88 (11.1)	1,676 (11.5)		12 (12.8)	1,747 (11.5)	
Asian	1,310 (8.4)	64 (8.1)	1,184 (8.1)		12 (12.8)	1,229 (8.1)	
Latino	1,299 (8.3)	82 (10.4)	1,209 (8.3)		12 (12.8)	1,277 (8.4)	
Other	324 (2.1)	28 (3.5)	291 (2.0)		3 (3.2)	316 (2.1)	
Perceived health status, n (%)							
Excellent	863 (5.5)	17 (2.2)	840 (5.8)	<.001	1 (1.1)	856 (5.7)	<.001
Very good	2,667 (17.1)	49 (6.3)	2,601 (18.0)		5 (5.3)	2,644 (17.5)	
Good	5,976 (38.3)	185 (23.8)	5,748 (39.7)		22 (23.4)	5,905 (39.0)	
Fair	4,376 (28.1)	300 (38.6)	4,017 (27.8)		30 (31.9)	4,282 (28.3)	
Poor	1,525 (9.8)	227 (29.2)	1,269 (8.8)		36 (38.3)	1,456 (9.6)	
Cognitively impaired, n (%)	1,219 (7.8)	98 (12.4)	1,019 (7.0)	<.001	18 (18.9)	1,097 (7.2)	<.001
Mental distress, n (%)	2,791 (17.9)	551 (70.3)	2,228 (15.3)	<.001	74 (78.7)	2,705 (17.8)	<.001
Drinking problem, n (%)	995 (6.4)	67 (8.6)	927 (6.4)	.01	12 (12.9)	979 (6.5)	.01

* Note: T test analyses were conducted for continuous variables and chi-square analyses for categorical variables.

Table 2. Hierarchical Logistic Regression of Predictors of Passive and Active Suicidal Ideation

Predictor	Passive Ideation		Active Ideation	
	Odds Ratio (95% Confidence Interval)	P-Value	Odds Ratio (95% Confidence Interval)	P-Value
Block 1				
Age	1.01 (1.00–1.02)	.004	0.95 (1.01–1.08)	.02
Sex	0.80 (0.68–0.95)	.01	0.42 (1.21–3.46)	.007
Marital status	0.60 (0.51–0.70)	<.001	0.65 (0.95–2.41)	.08
Ethnicity		.009		.30
Black	0.90 (0.70–1.15)	.42	1.18 (0.43–1.57)	.55
Asian	1.24 (0.93–1.65)	.13	1.79 (0.28–1.24)	.16
Latino	1.23 (0.95–1.59)	.10	1.81 (0.26–0.99)	.05
Other	1.80 (1.21–2.69)	.004	1.76 (0.19–3.42)	.79
Block 1 + 2				
Age	1.01 (1.00–1.02)	.003	0.95 (0.91–0.99)	.01
Sex	1.00 (0.84–1.21)	.92	0.52 (0.30–0.91)	.02
Marital status	0.77 (0.65–0.92)	.004	0.93 (0.58–1.48)	.77
Ethnicity		<.001		.55
Black	0.51 (0.39–0.66)	<.001	0.72 (0.37–1.40)	.72
Asian	1.03 (0.75–1.41)	.08	1.64 (0.76–3.54)	.20
Latino	0.60 (0.45–0.79)	<.001	0.99 (0.49–2.01)	.98
Other	1.14 (0.73–1.76)	.55	0.92 (0.27–3.08)	.89
Perceived health status		.006		.42
Very good	0.89 (0.49–1.60)	.60	1.52 (0.17–13.16)	.70
Good	1.37 (0.80–2.32)	.40	2.10 (0.28–15.89)	.46
Fair	2.15 (1.27–3.64)	.02	2.19 (0.29–16.51)	.44
Poor	3.33 (1.94–5.69)	<.001	4.92 (0.65–37.07)	.12
Cognitive functioning	1.32 (1.02–1.69)	.02	2.33 (1.34–4.05)	.002
Distress	0.09 (0.08–0.11)	<.001	0.07 (0.04–0.12)	<.001
Alcohol consumption	1.31 (0.98–1.76)	.06	1.91 (0.99–3.67)	.06

ones (active ideation) less openly. Further research is required to better understand this finding, which has implications for screening of suicidal ideation in older adults.

The present study highlights the importance of screening for distress and cognitive functioning in older adults in primary care. Cognitive functioning and distress have been shown to be associated with passive and active suicidal ideation. Although the rates of passive and active suicidal ideation are low, it is important to find easy-to-use and reliable means of detecting suicidal ideation in older adults. Given that many older adults may not openly acknowledge suicidal ideation, screening for distress and cognitive functioning may serve as a preliminary tool for detecting those more susceptible to suicidality. Furthermore, this information may already be found in patients' records and thus serve as an initial screening tool to identify a high-risk group of older adults.

Although this article presents promising information with regard to risk factors associated with suicidal ideation in older patients, a few caveats and clarifications require mention. First, this study provides preliminary information about the role of mild cognitive impairment in passive and active suicidal ideation but does not provide information about the specific types of impairments that may be more or less related to suicidal ideation. As stated earlier, understanding which cognitive impairments produce greater risk is important in determining a useful risk profile for potentially

suicidal adults. Future research should focus on better characterizing mild cognitive impairment subtypes that may be more or less related to suicidal ideation. It is likely that such subtyping will allow for better treatment planning. Second, although people who have suicidal ideation are at greater risk for attempting or completing suicide, having the thought is not the same as having a plan or actually committing suicide. The data here are generalizable to a broader category of patients with ideation, but the predictive variables identified do not necessarily predict the actual risk of suicide. Furthermore, only two questions were used to assess suicidality, and thus other forms of suicidal thoughts in older people could have been missed. Another limitation of this study is that, although the sample was large, it was not a representative sample of older adults in primary care. A large proportion of VA patients was included in this study. This population tends to have more comorbid conditions than the general population of older adults and has been shown to be at a higher risk for suicide.^{25,26} Furthermore, information was not available about refusal rates, and it is not known how those who refused to participate in the study differed from those who agreed. In addition, information about the educational level of participants was not available. Given the strong relationship between level of education and performance on cognitive tests, it is important to control for education level in future research. Finally, the study was restricted to those with normal to moderately impaired cognitive functioning

and did not include those with severe impairment. Thus, future research that is geared specifically toward evaluating cognitive predictors of suicidality in older adults is much needed.

Nevertheless, the present study identified a variety of demographic and clinical predictors of passive and active suicidal ideation. In contrast to previous research, this study used a large database of older adults in primary care and provides preliminary support for the role of cognitive functioning in suicidal ideation. It shows that demographic variables have little power in consistently predicting suicidal ideation, whereas clinical variables, in particular distress and to a lesser degree cognitive functioning, serve as stronger and more-consistent predictors of suicidal ideation. Primary care providers who work with older adults should be aware of the association between distress, cognitive impairment, and suicidal ideation. Screening for distress and cognitive impairment in primary care can serve as an initial step in the detection of suicidal ideation in older adults.

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