CHARACTERISTICS AND COMORBID SYMPTOMS OF OLDER ADULTS REPORTING DEATH IDEATION

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Abstract

Objective—To determine whether death ideation in late life is associated with markers of elevated risk for suicide, or reflects normal psychological processes in later life.

Design/Setting—Population based cross sectional study in Gothenburg, Sweden.

Participants—The sample consists of 345 men and women aged 85 (born 1901-02) and living in Gothenburg, Sweden.

Main Outcome Measures—The Paykel Scale measured the most severe level of suicidality over an individual's lifetime. Other key measures were severity of depression and anxiety and frequency of death/suicidal ideation over the previous month.

Results—Latent class analysis revealed distinct groups of older adults who reported recent death ideation. Recent death ideation did not occur apart from other risk factors for suicide; instead individuals reporting recent death ideation also reported either 1) recent high levels of depression and anxiety, or 2) more distant histories of serious suicidal ideation (indicative of worst point severity of suicidal ideation)—both of which elevate risk for eventual suicide.

Conclusions—Our results indicate a heterogeneous presentation of older adults who report death ideation, with some presenting with acute distress and suicidal thoughts, and others presenting with low distress but histories of serious suicidal ideation. The presence of death ideation is associated with markers of increased risk for suicide, including "worst point" active suicidal ideation.

Keywords

Suicide risk among older adults is challenging to detect: compared to younger adults, older adults (i.e., those age 65 and older) are less likely to report suicidal thoughts to others,[1] report higher levels of intent to die when engaging in suicidal behavior,[2] and are more likely to use highly lethal methods for suicide.[3] Up to 75% of older adults die on their first attempt.[4] A barrier to the prevention of late-life suicide is that the construct of suicidal ideation is not fully understood in this population.[5] Thoughts of one's own death, that one would be better off dead, or wishing for one's death are termed death ideation or passive suicidal ideation, while thoughts of suicide or of killing oneself are termed suicide ideation or active suicidal ideation. Given the increased saliency of one's own death later in life, a passive wish to die may represent an acceptance of death that is unlikely to progress to more serious forms of suicidal ideation. Alternatively, a passive wish to die may be a marker of distress and increased risk for suicide. Forsell found that psychiatric diagnoses were highly prevalent among a sample of older adults expressing a wish to die,[6] supporting the hypothesis that a wish to die is an indicator of distress rather than a reflection of normative psychological processes. Further, Raue and colleagues found that death ideation is predictive of all-cause premature mortality among older adults, and this association held for older adults with Minor Depression, Major Depression, and no depression diagnosis.[5] However, the prognostic significance of death ideation with regards to suicide risk in late-life suicide is less clear. Szanto and colleagues report that on variables including hopelessness, number of hospitalizations, number of depressive episodes, and past suicide attempts, depressed older adults reporting current passive ideation versus those reporting current active ideation did not differ.[7] These findings suggested that older adults who report passive (or death) ideation are at similar risk for suicide to those reporting active suicidal ideation.

The objective of this paper is to build upon Szanto and colleagues' findings and consider both recent suicidal ideation and behavior as well as more remote histories of suicidal ideation and behavior to classify and characterize older adults. Consideration of past ideation is relevant to future risk as individuals' "worst point" severity of suicidal ideation has been found to be a strong predictor of eventual suicide, stronger than a more recent assessment of suicidality.[8,9] Our goal is to understand whether older adults who report death ideation comprise a heterogeneous group, with some at elevated suicide risk despite the absence of active suicidal ideation. Our approach was to use latent class analysis (LCA) to empirically derive subgroups of older adults based on the presence or absence of suicide-related ideations and behaviors.

We reasoned that if some presentations of death ideation are relatively less pernicious and reflective of normative psychological processes in the aging process, we would identify a group of older adults endorsing a wish to die in the context of functional impairment, but in the absence of active suicidal ideation[10] and with minimal psychological distress, manifested as low levels of depression and anxiety[11–13] (i.e., a Low Distress/Death Ideation group). If suicidal risk was indeed less pernicious in this group, then we anticipated that those with Low Distress/Death Ideation would also score low in a known correlate of suicide risk, social isolation.[14,15] We also predicted the presence of another group endorsing

a passive wish to die: this group would not endorse active suicidal ideation, but would be at elevated risk for suicide due to the presence of clinically significant depressive and anxiety symptoms and high scores on both functional impairment and social isolation (i.e., a "High Distress/Death Ideation" group).

Although not of primary interest in testing our hypotheses regarding death ideation, in addition to these key groups, we also predicted that there would be a third group with little mental distress and no death or suicidal ideation (i.e., Low Distress/No Ideation), a fourth group with high levels of mental distress and no death or suicidal ideation (i.e., High Distress/No Ideation), and a final high-risk group of distressed individuals with suicidal ideation (i.e., High Distress/Suicidal Ideation).

To test for the presence of such groupings, we conducted a latent class analysis with a census-based sample of Swedish older adults. A previous study examining suicidal thoughts and behaviors in this sample found that 27.5% of those diagnosed with a mental disorder reported a wish to die.[16] Given that older adults at risk for suicide do not commonly present in mental health settings and most often die on the first suicide attempt, this community sample is a reasonable choice for identifying older adults at elevated risk for suicide.

We selected LCA, which yields categorical rather than dimensional results, because clinicians tend to think in terms of categories in making risk management decisions. Our paper does not propose to answer the question of whether a categorical model is better than a dimensional model, which would best be answered with taxometric analyses;[17][18] rather, we are interested in describing a categorical model that could be compared in future studies with a dimensional model in terms of its accuracy in characterizing the latent construct of suicide risk.

Method

Participants

The sample consists of 345 Swedish adults, all aged 85 years who were born between July 1, 1901 and June 30, 1902 who were registered in the census in Gothenburg, Sweden and agreed to participate in a health survey (response rate 63.1%) between 1986–1987. For additional details on the sampling strategy, see Skoog et al.[16][19] Our study sample consists of those who did not meet criteria for dementia out a larger sample of 494. The majority of the sample was female (70.3%). Approximately half reported living alone (56.7%) and a substantial portion resided in nursing homes (19.6%). Criteria for a depressive disorder in the past month were met for 12.7% of the sample. Previous suicide attempts were reported by 1.7% of the sample (n=6). The study was approved by the Ethics Committee of Goteborg University.

Procedures

Interviews were conducted in the participants' homes. Information on social and living conditions and services utilized was collected by a registered nurse. Diagnostic and symptom level data were collected by a psychiatrist using a semi-structured interview, the Comprehensive Psychopathological Rating Scale (CPRS), which is described below. Descriptive data on suicidal ideation from these participants have been previously published, 16 however the current study is novel.

Measures: Latent Class Indicators

Paykel Suicide Items.[20]—The Paykel Scale consists of five items that evaluate the presence of suicidal ideation and behaviors over a specified period of time. The time frame

in the current study was the participants' lifetime. The items (all dichotomous yes/no) characterize whether individuals felt life was not worth living, wished they were dead, had thoughts of taking their own life, had seriously considered taking their own life, and had ever made a suicide attempt. These items are used to assess lifetime worst-point suicidality.

Comprehensive Psychopathological Rating Scale (CPRS).[21]—The CPRS is a clinician rating of psychiatric symptoms that has been validated for use among older adults.[22] The CPRS was used to assess "distress" (i.e., depression and anxiety symptomatology) during the month prior to the interview. The *Montgomery Asberg Depression Rating Scale (MADRS)*[23] is a subscale of the CPRS and was used as a continuous indicator of depressive symptomatology, with higher scores indicating greater severity; a score of 30 or higher is considered indicative of severe depression in the past month. The *Brief Scale for Anxiety (BSA)*[24] is also a subscale of the CPRS and was used as a continuous indicator of anxious symptomatology, with higher scores indicating greater severity. The MADRS and BSA share two items. For the present analyses, the item measuring sleep reductions was included in the MADRS total score while the item measuring inner tension was included in the BSA total score. The item measuring current suicidal ideation was not included in the MADRS total score; rather it was used as a separate indicator. This item is scored from 0 to 6 with the following anchors, all rated for the prior month: 0—enjoys life or takes it as it comes; 2—weary of life, only fleeting suicidal thoughts; 4—probably better off dead, suicidal thoughts are common and suicide is considered as a possible solution, but without specific plans or intention; 6—explicit plans for suicide when there is an opportunity, active preparations for suicide. Scores subjects ranged from 0 to 5 (mean = .44, sd = 1.02). The majority of the participants were assigned a rating of 0 (82%). To facilitate interpretation, this variable was collapsed into three groups according to the severity of suicidal ideation experienced during the prior month: none (0 rating), "fleeting" (ratings 1–3), and "frequent" (ratings 4+) and is used to represent "current suicidal ideation."

Correlates of Class Membership

The total number of *Activities of Daily Living (ADL)* impairments served as an indicator of functioning. The need for any type of assistance was indicative of impairment. A single item was used as an indicator of current *social isolation*, considered present if participants endorsed that they never talk to their neighbor (or fellow resident if the participant lived in a nursing home). *Mental Disorders* were diagnosed using a semi-structured interview according to the Diagnostic and Statistical Manual of Mental Disorders (third edition, revised)[25] criteria guided by the CPRS. Depressive disorders included major depression (n = 34), dysthymia (n = 23), and depression not otherwise specified (n = 2).

Data Analysis

Latent class analysis (LCA) was conducted using the Mixture Modeling procedure in Mplus version 5.1. Recommended procedures of Muthén & Muthén[26] were followed for conducting and interpreting data from the LCA. The following variables were entered as indicators of class membership: *lifetime history of suicidal behavior* with the Paykel suicide items (n=5) as binary indicators; *current/recent suicidal ideation* with the MADRS suicide item as a categorical indicator (with three response categories); *current depression severity* with MADRS depression scores as a continuous indicator (excluding the suicide item); *current anxiety severity* with BSA anxiety scores as a continuous indicator. Indicators were not specified to correlate within class. Models were compared with regards to the Bayesian Information Criterion (BIC), entropy, and interpretability. All available data were used in estimation through direct maximum likelihood using the robust maximum likelihood estimator (MLR).

Results

Descriptions of Samples

Descriptive statistics (i.e., mean and standard deviation for continuous variables; *n* and percentages for categorical variables) for the latent class indicators and covariates appear in the first column in Table 1. Nearly a quarter of the sample (24.3%) endorsed feeling that life was not worth living at some point in their lives (i.e., Paykel item 1), with 14.9% of the sample endorsing any severity of death/suicidal suicidal ideation in the past month (i.e., "fleeting" or "frequent" ideation on the MADRS suicide item). Having active suicidal ideation (i.e., thoughts of taking one's own life) at some point in one's life was endorsed by 9.5% of the sample.

Determination of Number of Classes

Fit statistics and entropy values for three through six classes were compared (full results available on request). The five-class model was retained because this model yielded the highest entropy (i.e., an index of the clarity of classification27), lowest Bayesian Information Criterion (BIC) value (i.e., an indicator of model fit), and a highly interpretable class structure (discussed below).

To examine the stability of the observed class structure, two ancillary analyses were run that varied the input data and indicators used: first, a LCA with the same indicators as the primary analysis, but using a larger sample size (n = 494) by including subjects who met criteria for dementia; this analysis was deemed acceptable because research suggests individuals with dementia can reliably report depression symptoms.[28] Second, the LCA was run with our primary sample with the anxiety indicator of class membership removed. For both analyses, a five-class model yielded the best fit. Further, for both analyses, the proportional sizes of each class changed by a maximum of two percentage points and demonstrated similar patterns of conditional probabilities for the indicators (full data available upon request). These data support the stability of a five-class structure.

Interpretation of Classes

The patterns of conditional probabilities for all indicators and classes were examined in order to interpret the classes and assign descriptive labels to the classes (see Table 1). Each participant was classified according to his/her most likely latent class membership (using posterior probabilities) allowing counts and proportions to be calculated for each latent class. The classes were numbered from one (lowest conditional probabilities of suicidality) to five (highest probabilities). To further characterize the classes, we also compared them on demographic, psychiatric, medical, and social variables that were not included as indicators of class membership (see bottom of Table 1 under "correlates").

Classes Without Death Ideation

A class labeled Low Distress/No Ideation – characterized by low psychological distress (as measured by depression and anxiety severity) and minimal suicidality endorsements—was the largest class, accounting for 74% (n=255). Given assignment to this class, the probability of *denying* any death/suicidal ideation over the past month was 98% and none of these individuals had ever seriously considered or attempted suicide. This class is consistent with the presence of a "healthy" class. Individuals assigned to this class are characterized by the lowest probabilities of depressive disorders and social isolation, and the lowest level of functional impairment (i.e., average of 1.50 ADL impairments).

A class labeled High Distress/ No Ideation – characterized by minimal suicidality endorsements but elevated levels of distress – was a smaller class, accounting for 6% (n =

20). Its members were characterized by an elevated probability of depressive disorders, but a low probability of social isolation, and a somewhat elevated level of functional impairment (i.e., 1.90 ADL impairments).

Classes With Death Ideation

A class labeled High Distress/ Death Ideation was identified (n = 25; 7%). This group was characterized by elevated levels of depressive and anxiety symptoms, but was also characterized by substantial probabilities of "fleeting" suicidal ideation in the past month as well as substantial probabilities of histories of death ideation, but no histories of active suicidal ideation. Similar to the High Distress/ No Ideation class, this class was also characterized by an elevated probability of depressive disorders, but a low probability of social isolation. However, functional impairment was elevated (i.e., 2.12 ADL impairments). This class was consistent with our predictions regarding the presence of death ideation only (no active suicidal ideation) in the presence of functional impairment, but absence of social isolation. However, this class was inconsistent with our predictions regarding distress: we did not expect this class to endorse significant depressive and anxious psychopathology, both of which are correlates of suicide risk, and inconsistent with a non-pathological acceptance of death.

A class labeled Low Distress/ Suicidal Ideation, not predicted *a priori*, accounted for 10% (n = 35) of the sample. This class was characterized by low levels of depressive and anxious symptomatology, but also elevated probabilities of recent death ideation (i.e., last month) as well as significant probabilities of worst point active suicidal ideation, including thoughts of taking one's life and engaging in suicidal planning. Its members were characterized by lower levels of functional impairments (mean = 1.74) compared to the High Distress/ Suicidal Ideation class that is described below (95% confidence interval [CI] around mean difference −3.24 to −.47; corrected with Tukey's HSD comparison) and a lower probability of social isolation (6% vs. 40%). Only 9% of the older adults in this class met criteria for any depressive diagnosis. These data indicate the presence of older adults with histories of worst point active suicidal ideation who demonstrate recent death or suicidal ideation, but with low levels of depression and anxiety. To examine the clinical relevance of the level of depression reported by these individuals, we conducted post-hoc analyses for members of this class. Specifically, we computed the total score on all 10 of the items on the Montgomery-Asberg scale (i.e., a sum of all items to allow for comparisons with published cutoffs), and compared it to empirically derived cut off scores indicating the absence of clinically significant symptoms of depression.[29] The average total score was 6.8 (sd 4.79), which is below a less stringent cutoff for the absence of clinically significant symptoms of 9,[29] but above a more stringent cutoff of 4;[29] suggesting that this group of older adults presents with suicidal thoughts in the context of minimal depressive symptoms.

Finally, the smallest class was labeled High Distress/ Suicidal Ideation and accounted for 3% (n=10) of the sample. Given assignment to this class, the probabilities of endorsing both fleeting and frequent suicidal ideation in the prior month were significantly elevated. All class members endorsed past thoughts of suicide, probabilities of prior serious ideation/ planning as well as past attempts were significantly elevated, and the mean depression and anxiety scores were high. Therefore, this class was labeled High Distress/Suicidal Ideation to reflect that these individuals had histories of active planning and/or suicidal behaviors (i.e., their most serious manifestations of suicidality). Its members characteristically had the highest levels of functional impairments and social isolation, as well as the highest probability of a depressive diagnosis.

Discussion

We proposed that older adults reporting recent death ideation would comprise a heterogeneous group. Our data support this proposal, indicating several different "classes" (or groups) of older adults based on both recent and worst point suicidality endorsements and both depressive and anxious symptomatology. An unexpected grouping in this population-based sample of Swedish older adults was of Low Distress/Suicidal Ideation. These individuals' presentations at the time of the interview indicated recent death ideation, consistent with the presentation of the individuals reporting death ideation in the absence of a depressive diagnosis described by Raue et al.[5] However, our analysis also considered worst point past suicidal ideation and found that a significant portion of these individuals who reported recent death ideation (i.e., past month) in the context of limited depressive symptoms (i.e., also in the past month) also had past histories of active suicidal ideation. As mentioned above, worst point severity of suicidal ideation has been found to be a stronger predictor of eventual suicide than the most recent assessment. Further, our results indicated that recent death ideation did not occur apart from other risk factors for suicide; instead individuals reporting recent death ideation also reported either 1) recent high levels of depression and anxiety, or 2) more distant histories of serious suicidal ideation, both of which elevate risk for eventual suicide. This suggests that the presence of death ideation should not be considered an indicator of normative psychological processes used to cope with stresses of aging. Rather, death ideation should be conceptualized as a marker of distress. Further, in our sample, death ideation was associated with markers of elevated suicide risk and thus may also be a marker of increased risk for suicide.

Future research could investigate the association of class membership with neuropsychological and neurobiological measures associated with suicidal behavior to further validate the class structure and better characterize class members. One candidate measure is social emotion recognition, which has recently been shown to characterize older adult suicide attempters.[15]

Future research could also investigate the question of whether a categorical or dimensional model best represents the latent construct of suicide risk in late life, and relatedly, which model is associated with the best predictive validity and clinical utility. A recent taxometric analysis of depressive symptoms among older adults found that those older adults presenting with death and suicidal ideation appear to represent a specific type (category) of late-life depression, but that a continuous model of depression severity had greater predictive utility for negative outcomes associated with depression, including medical comorbidities and problem drinking.[30] These results suggest that both categorical and dimensional models have utility with regards to late-life depression. Investigations specifically focused on the underlying latent structure of late-life suicide risk could be useful to inform risk assessment and management strategies.

Our findings should be considered in light of several limitations. First, the degree to class membership is associated with heightened suicide risk is uncertain and can only be determined by future studies with larger samples and longitudinal follow-up to track incidence rates of suicidal behaviors. In support of the construct validity of these labels, however, is that death and suicidal ideation were critical components in the latent class analyses and helped differentiate these groupings. Second, the sample was predominantly female, thus limiting generalizability to the group at highest risk – older white males, and there were no significant gender differences across latent class groupings present. Third, our data do not allow us to examine the possibility that death ideation was a residual symptom from a recently partially resolved MDE for the individuals in the Low Distress/Suicidal Ideation; thus future studies should measure past histories of depression. Finally, the dataset

only contained 85 year olds, and the data were collected some time ago, thus additional studies are needed to examine the extent to which these findings represent a cohort effect.

In the context of these limitations, our findings nonetheless have the potential to inform suicide prevention efforts. Older adults with histories of suicidal ideation appear to be a heterogeneous group, and clinicians are thereby advised to be cognizant of at least two groups of older adults: 1) those presenting with the most often cited risk factors for suicide, namely psychological distress and suicidal ideation, and 2) those with recent histories of death ideation regardless of levels of reported psychological distress, as these individuals are likely to have more distant histories of thoughts of taking their own lives, placing them at risk for eventual suicide. Given that this census-based sample found that 1 in 10 older adults were characterized by a profile of histories of serious suicidal ideation/behavior in the absence of current psychological distress other than recent death wishes, research is needed to examine the potential benefits of regular screening of suicide risk among all older adults, not just those with depression. Research is also needed regarding clinical management of those older adults presenting with death wishes in the absence of significant depression—specifically, whether treatments shown to be effective for older adults with suicidal ideation and depression [31–33] are useful and whether treatments targeting factors other than depression (e.g., targeting loneliness[34]) are also useful.

In conclusion, our data indicate considerable heterogeneity among older adults who report death ideation and it may be appropriate for clinicians, public health researchers, and future interventions to expand the scope of suicide prevention efforts beyond older adults with significant depression and/or anxiety.

Acknowledgments

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Table 1

Descriptives and Conditional Probabilities for Indicators Given Class Membership

Construct	Indicators	Total Sample	Low Distress/ No Suicidal Ideation Class 1	High Distress/ No Suicidal Ideation Class 2	High Distress/ Death Ideation Class 3	Low Distress/ Suicidal Ideation Class 4	High Distress/ Suicidal Ideation Class 5
		n=345 (100%)	n=255 (74%)	n=20 (6%)	n=25 (7%)	n=35 (10%)	n=10 (3%)
Distress	MADRS depression[a]	6.20 (6.73)	3.882	12.520	18.095	5.913	23.517
	BSA anxiety[a]	7.48 (6.04)	5.586	19.732	16.125	5.933	15.886
Current SI	None	0.858	0.981	1.000	0.088	0.659	0.103
	Fleeting	0.116	0.019	0.000	0.912	0.275	0.220
	Frequent	0.026	0.000	0.000	0.000	0.066	0.667
History of SI/SB	Life not worth living	0.248	0.100	0.068	0.776	0.799	1.000
	Wish for death	0.217	0.050	0.000	0.834	0.860	1.000
	Taking own life	0.108	0.012	0.079	0.034	0.601	1.000
	Serious/plan	0.041	0.000	0.000	0.000	0.193	0.721
	Attempt	0.017	0.000	0.000	0.000	0.028	0.515
Correlates	Men	0.301	0.325	0.150	0.200	0.314	0.200
	Social isolation	0.075	0.063	0.050	0.120	0.057	0.400
	Lives alone	0.667	0.686	0.700	0.640	0.514	0.700
	Lives in nursing home	0.087	0.071	0.050	0.160	0.171	0.100
	Any depression diagnosis	0.162	0.075	0.500	0.720	0.086	0.600
	ADL impairments [a]	1.663	1.513	1.900	2.120	1.740	3.600

Note. For the Total Sample column, MADRS and BSA values are means, all other values are proportions reporting each indicator. Statistically significant loadings are underlined. MADRS = Montgomery-Åsberg Depression Rating Scale. BSA = Brief Scale for Anxiety. SI = Suicidal ideation. SB = Suicidal behavior. Social isolation = Never talk with neighbor. Any depression diagnosis = Major Depression, Dysthymia, Depressive Disorder NOS in the past month.

[a] Continuous variables: data are means (and standard deviations) rather than probabilities