

Self-Destructive Behaviors in Nursing Home Residents

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OBJECTIVES: To validate the Harmful Behaviors Scale (HBS) as a measure of direct and indirect self-destructive behaviors in nursing home residents and to determine the prevalence of self-destructive behaviors and their relationship to other variables.

DESIGN: A cross-sectional study.

SETTING: Eleven nursing homes in the eastern suburbs of Sydney, Australia.

PARTICIPANTS: Six hundred ten nursing home residents aged 65 and older.

MEASUREMENTS: Instruments used were the HBS, Behavioral Pathology in Alzheimer's Disease Rating Scale (BEHAVE-AD), Functional Assessment Staging Scale (FAST), Even Briefer Assessment Scale for Depression (EBAS-Dep), and the suicide item from the structured Hamilton Depression Rating Scale. Data on diagnoses of dementia, depression, or psychotic disorder; prescription of psychotropic medication; and demographics were obtained from nursing home records.

RESULTS: On the HBS, indirect harmful behaviors occurred at least weekly in 61% of subjects, and direct harmful behaviors occurred in 14% of subjects. The HBS total score was significantly positively correlated with the BEHAVE-AD score (Pearson's $r = 0.679$, $P < .001$) but not with the EBAS-Dep "wish for death" item and total score. HBS scores were significantly higher in residents scoring greater than zero on the Hamilton suicide item ($F = 1.380$, $df = 3,325$, $P = .249$). Stepwise multiple linear regression indicated that younger age, chart diagnosis of dementia, greater incapacity as measured by FAST, and a higher Hamilton suicide item score predicted a higher HBS total score.

CONCLUSIONS: Self-destructive behaviors are common in nursing home residents and are mostly related to de-

mentia. There was little evidence of a relationship between depression and self-destructive behaviors. *J Am Geriatr Soc* 50:354-358, 2002.

Key words: suicidal ideation; harmful behavior; nursing home

Behavioral disturbances are present in up to 93% of nursing home residents in the United States and up to 90% in Australia.^{1,2} Most research has focused on behaviors that affect staff and other residents, for example, aggression, wandering, and vocal disruption. Less attention has been paid to self-destructive behaviors that mainly affect the residents' own health and quality of life.

Self-destructive behaviors may be overt and include deliberately inflicted behaviors (for example self-cutting), which have an immediate effect and result in death, injury, or pain, or indirect (e.g., refusal to eat or drink), which may occur over a long period. The person may be unaware of the harmful effects of the indirect behaviors.³ Indirect self-destructive behavior has been defined as "an act of omission or commission that causes self-harm leading indirectly, over time, to the patient's death."⁴ Some indirect behaviors (for example, physical and verbal abuse) may evoke anger, frustration, and resentment, resulting in the resident becoming unpopular, verbally abused, or even assaulted. Self-destructive behaviors may range in intent from wishing to die (suicide) to gambling with death to hurting oneself to unintentional (accidental).³ Indirect self-destructive behaviors may be linked to depression and suicidal intent, as evidenced by high global suicide rates in older people,⁴⁻⁶ and to dementia, pain, and coping style.⁴

Our aims were to validate the Harmful Behaviors Scale (HBS) as a measure of indirect and direct self-destructive behaviors in nursing home residents; to determine the prevalence of self-destructive behaviors; and to investigate their relationship to suicidal ideation, depressive symptoms, and other behavioral disturbances. By including a broad range of behaviors irrespective of their apparent motivation, we sought to address two major limitations of existing studies: the absence of formal data on resident variables associated with self-destructive behaviors⁴ and the lack of consensus on which behaviors to measure.⁴

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This work was supported by an action research grant from the National Action Plan for Dementia Care, Commonwealth Department of Health and Family Services, Commonwealth Government of Australia and a special grant from the School of Psychiatry, University of New South Wales.

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METHODS

Of 25 Eastern Sydney nursing homes, three declined to participate in our survey; the remaining 22 were stratified into three groups by size, and half of each group was selected by geographical proximity to our research center to participate in the survey. The nursing directors and proprietors of the participating nursing homes gave permission to conduct the survey, which the institutional ethics committee of the University of New South Wales approved. The capacity of residents to give informed consent was determined in a two-stage process based on published guidelines.⁷ Nonconsenting residents were excluded from face-to-face interviews.

Data were obtained from nursing home records on diagnoses of dementia, psychotropic prescriptions, and demographics. Registered nursing staff most familiar with the residents completed the behavioral rating scales.

Instruments

Scales Used for All Residents

The HBS was used to measure direct and indirect self-destructive behaviors. The HBS is derived from direct and indirect self-destructive behaviors mentioned in the earlier literature deemed relevant to Australian nursing homes.^{6,8,9} Each item was rated on a 5-point scale (never, less than once per week, about once per week, several times per week, once or more per day) for the previous 2 weeks. Direct self-destructive behavior items were rated for intentionality (yes, no, or unsure).

Mean scores of separate morning and evening nurse ratings of the Behavioral Pathology in Alzheimer's Disease Rating Scale (BEHAVE-AD)¹⁰ were used to measure general behavioral disturbances. The Functional Assessment Staging Scale (FAST),¹¹ an observer rating scale measuring functional incapacity in dementia, was used to indicate general incapacity.

Additional Scales Used for Residents Who Provided Informed Consent

Depressive symptoms over the previous month were measured with the Even Briefer Assessment Scale for Depression (EBAS-Dep),¹² an 8-item depression scale validated in nursing homes^{12,13} and administered by the research staff. Scores of 3 or greater indicated the probable presence of depressive disorder. Research staff assessed suicidality over the previous week with the suicide item from the structured Hamilton Depression Rating Scale.¹⁴ The 10-item Abbreviated Mental Test Scale (AMTS)^{15,16} was used to measure cognitive function, with scores less than 8 indicating the presence of significant impairment.

Statistics

Data were analyzed using the SPSS statistical package, Version 9.0.¹⁷ Skewed data were transformed using $\log(1 + \text{variable})$ transformations when possible. Pearson's r and Spearman's ρ were used to examine relationships between variables, depending on the normality of the data. Student t test and analysis of variance were used to examine differences between groups. All tests were two-tailed. Alpha was set at .05 except when Bonferroni corrections were necessary. The recommended level of significance after Bonferroni corrections for multiple comparisons is .0167.

Predictors of HBS score were assessed using stepwise multiple linear regression analysis. Probability of F for entry was set at .05 and probability for removal at .10. Independent variables entered into the analysis were age, gender, chart diagnosis of dementia, regular psychotropics, as needed psychotropics, FAST, EBAS-Dep, and the Hamilton suicide question.

RESULTS

Of a population of 647 residents, 610 (94.4%) aged 65 and older were included in the analyses. Their mean age was 83.9 (range 65–111); 455 (74.6%) were female. A diagnosis of dementia was present in 361 (59.2%) nursing home records. Of the 338 residents tested using the AMTS, 277 (82.0%) were found to be cognitively impaired. Twenty-one subjects (6.2%) with a chart diagnosis of dementia did not score in the cognitively impaired range on the AMTS.

Harmful Behavior Scale

Means of the morning and evening HBS scores ($N = 600$) were used for analyses, because certain behaviors tended to occur only at particular times. Morning and evening total HBS scores were moderately correlated ($r = 0.627$, $P < .001$) and were significantly correlated (Spearman correlations ranged from .081 to .616) for 21 of the 23 HBS items. The two items on which ratings did not correlate were "overdosing on medication," because no subject was rated positive for behavior on this item by an evening rater, and "other" (only rated eight times).

The internal consistency reliability was acceptable when calculated using the 23 items of the HBS for the morning shift (Cronbach's $\alpha = 0.86$), evening shift ($\alpha = 0.85$), and mean HBS score ($\alpha = 0.87$). Interrater reliability was tested in a pilot study ($n = 41$), kappas ranged between 0.370 and 0.597, with the exception of the item "refuses participation in social activities," for which the kappa was 0.275. The intraclass correlation for the total score was 0.896 (95% confidence interval 0.812–0.944).

In the 2 weeks before assessment, indirect behaviors occurred at least weekly in 60.8% of subjects, and direct harmful behaviors occurred at least weekly in 14.1% of subjects (Table 1). Indirect behaviors had higher frequency ratings (mean \pm standard deviation (SD) = 0.481 ± 0.549) than direct behaviors (mean \pm SD = 0.083 ± 0.153).

HBS Correlates

The HBS total score was significantly positively correlated with the BEHAVE-AD (Pearson's $r = 0.679$, $P < .001$) and all of the BEHAVE-AD subscales, in particular with the Affective Disturbances subscale (Spearman's $\rho = 0.367$, $P < .001$).

HBS scores were similar in men and women ($t = 1.497$, $df = 598$, $P = .135$) but significantly higher in residents who had a chart diagnosis of dementia than in those who did not ($t = -4.771$, $df = 549$, $P < .001$). Subjects taking any psychotropic medication ($n = 290$; $t = -2.235$, $df = 635$, $P = .026$) or regular antipsychotic medication ($n = 128$; $t = -4.077$, $df = 598$, $P < .001$) had significantly higher HBS scores. There was no association between those on antidepressants and HBS score ($t = -1.260$, $df = 598$, $P = .208$).

Table 1. Percentage and Frequency Ratings of Self-Harm Scale and Spearman Correlations with Depression and Suicide Measures (N = 600)

Self-Injury Item	Less Than Once per Week		Weekly %	Several Times per Week	Daily	Rating (Range 0-4)	Correlation with BEHAVE-AD Affective Disturbance		Correlation with EBAS-Dep Total Score	Correlation with Suicide Item	Percentage Rated Intentional†	Percentage Rated Intentional†	Percentage Unsure†
	Never	Once					mean ± SD	Correlation with BEHAVE-AD Affective Disturbance					
Refuses participation in social activities	42.8	17.1	21.8	7.7	10.5	1.143 ± 1.300	.259*	.003	.090				
Resists ADL assistance	55.2	20.0	10.1	6.6	8.0	0.807 ± 1.218	.202*	.004	.067				
Refuses to follow staff requests	49.3	26.7	10.8	7.8	5.3	0.786 ± 1.099	.311*	.037	.097				
Verbal abuse	55.7	25.6	8.0	6.5	4.2	0.657 ± 1.022	.305*	.006	.034				
Refuses to eat or drink	56.8	28.0	9.9	2.8	2.5	0.532 ± 0.844	.255*	.135*	.107				
Tries to walk unassisted against advice	73.1	13.4	8.2	3.5	1.8	0.404 ± 0.842	.196*	-.021	.037				
Refuses to take medication	70.6	17.7	7.0	2.7	1.8	0.392 ± 0.789	.155*	.081	.123*				
Alienates staff, provokes rejection	74.5	14.2	6.5	3.6	1.2	0.357 ± 0.774	.305*	.048	.090				
Not eating/drinking on own when capable	73.1	16.5	7.1	2.0	1.2	0.351 ± 0.774	.242*	.043	-.014				
Physical abuse of staff and residents	77.8	13.3	5.2	2.0	1.6	0.297 ± 0.717	.237*	-.021	.017				
Exposes self to hazards	80.3	10.0	5.4	2.2	1.8	0.293 ± 0.747	.195*	-.064	-.004				
Scratching excessively†	77.0	15.7	4.3	1.4	0.6	0.245 ± 0.589	.160*	-.032	-.050		60.9	31.3	7.8
Falls†	74.2	21.5	4.0	0.3	0	0.213 ± 0.436	.215*	.011	.016		89.2	6.8	4.1
Tries to abscond from the nursing home	89.2	6.5	1.9	1.6	0.8	0.156 ± 0.562	.047	-.050	.018				
Removing catheters, tubes, dressings†	88.8	6.7	3.8	0.4	0.3	0.138 ± 0.472	.143*	.098	.090		33.9	55.9	10.2
Verbal suicide expression	90.7	7.5	1.2	0.5	0.2	0.088 ± 0.350	.345*	.199*	.153*				
Hitting walls, doors etc†	92.0	7.0	0.8	0.2	0	0.067 ± 0.261	.186*	.044	.046		50.0	45.7	4.3
Burning or scalding†	92.7	6.5	0.8	0.0	0	0.052 ± 0.206	.159*	-.127*	-.114*		86.0	14.0	0
Eating foreign objects or drinking toxic liquids†	94.7	3.8	1.5	0.0	0.0	0.048 ± 0.233	-.006	.042	.136*				
Cutting self with sharp object†	96.5	3.0	0.5	0.0	0	0.026 ± 0.152	.174*	-.006	.015		65.0	25.0	10.0
Taking unauthorized medication†	97.2	2.5	0.4	0.0	0.0	0.021 ± 0.142	.078	-.024	.009				
Other†	98.8	0.3	0.9	0	0	0.019 ± 0.183	.005	-.009	-.029		0	80.0	20.0
Overdosing on medication†	99.8	0.2	0	0	0	0.001 ± 0.020	-.043	—	—		100	0	0

Note: †Intent was measured only for behaviors initially conceptualized as directly harmful. Percentages are computed including only subjects who demonstrated the behaviors.

* Indicates a significant result at the .05 level.

† Indicates direct harmful behaviors, all other items were considered indirect harmful behaviors.

BEHAVE-AD = Behavioral Pathology in Alzheimer's Disease Rating Scale; EBAS-Dep = Even Briefe Assessment Scale for Depression; ADL = activities of daily living.

Spearman correlations between HBS items, the total EBAS-Dep score, and Hamilton suicide item are presented in Table 1. There was no significant correlation between EBAS-Dep total score and HBS (Pearson's $r = 0.043$, $P = .434$) or between EBAS-Dep "wish for death" item and HBS (Spearman's $\rho = 0.060$, $P = .280$). There were no significant differences between total HBS scores of residents who chose different responses to the Hamilton suicide item ($F = 1.380$, $df = 3,325$, $P = .249$). We compared the EBAS-Dep, Hamilton suicide item, and HBS scores of residents who were rated as having any intentional direct behaviors with those of the other residents. Residents with intentional behaviors had significantly higher HBS scores ($t = -9.421$, $df = 598$, $P < .001$) but similar EBAS-Dep and Hamilton suicide item scores ($t = -1.244$, $df = 329$, $P = .214$; $\chi^2 = 1.155$, $df = 332$, $P = .764$).

Younger age, chart diagnosis of dementia, greater incapacity as measured by FAST, and a higher Hamilton suicide item score predicted higher HBS scores (Table 2).

DISCUSSION

We confirmed that self-destructive behaviors in nursing home residents are common. Indirect behaviors, such as refusal to eat, take medication and co-operate with staff, occur in about 61% of residents at least weekly and direct behaviors, such as cutting, hitting, and eating foreign objects, occur at least weekly in about 14%.

The HBS was devised to measure direct and indirect self-destructive behaviors in a nursing home setting. Previously published scales used to measure these behaviors were deemed unsuitable because they were designed for veterans in intermediate medical care⁹ and patients in a state mental hospital.^{7,8} Scales for measuring behavioral disturbances in dementia (e.g., the BEHAVE-AD,¹⁰ Neuropsychiatric Inventory,¹⁸ and the Revised Memory and Behavior Problems Checklist¹⁹) do not have items that adequately measure self-destructive behaviors. There is a need to specifically measure the construct of self-destructive

behavior in nursing homes to test whether the anecdotal reports linking the behaviors with depression and suicidality are supported by empirical data.

The HBS appears to have acceptable psychometric properties apart from two items: overdosing on medication and other. These did not have acceptable interrater reliability, were infrequently used, and should be excluded from future use. Measurement of the intent of these behaviors is inherently difficult, particularly because the majority of residents are cognitively impaired and because an observer rates the scale. The intentionality rating provided by the nurses about the direct behaviors should be interpreted with caution, because we have no external validation. In addition, there was no attempt to ascertain the nature of the intention, whether it is to die, gain attention, or be a cry for help. However, residents who were rated as exhibiting any intentional behaviors had significantly higher HBS scores, suggesting that "intent" was attributed to residents who repetitively exhibited these behaviors.

Although the HBS score was not significantly associated with depressive symptoms, including the "wish for death" item on the EBAS-Dep, there was a weak association between HBS score and the Hamilton suicide item. In addition, the HBS items "refuses to eat and drink" and "verbal suicide expression" were associated with depressive symptoms and the Hamilton suicide item. Thus, there are mixed findings regarding the relationship of depressive symptoms and suicidal ideation with self-destructive behaviors.

In the majority of residents, indirect self-destructive behaviors are more likely to be a manifestation of dementia and to be associated with other behavioral disturbances, as indicated by the regression analysis. Nursing home residents with dementia often sustain injuries due to their behavior; for example, falls, resistance to personal care, absconding, and physical and verbal abuse are frequently encountered, and in this context any self-harm that occurs is likely to be accidental.

A major limitation of this study is the lack of direct observational data. Registered nurses or nurses who had closest daily contact with residents completed the BEHAVE-AD and HBS. Nevertheless, nursing staff vary in their knowledge and responses.²⁰ In addition, we obtained two independent ratings on each scale for each resident and used the mean scores of the ratings.

Our future research with the HBS will focus on several areas. These include the identification of categories of self-destructive behaviors, their associations with other patient and nursing home variables, and their value in predicting mortality and morbidity.

In conclusion, this study has demonstrated that self-destructive behaviors are common in nursing homes and that, in the majority of residents, indirect self-destructive behaviors are most likely to be a manifestation of dementia. It remains to be determined whether any of these behaviors are associated with increased mortality or indirect suicidal intent.

ACKNOWLEDGMENTS

Special thanks to Fiona Cameron, Simone Sharrah, Kate Martin, Angela Ferrel, and Yeates Conwell; to the staff of Camelot, Chesalon, Daintrey, Edina, Eric Calla-

Table 2. Beta Coefficients for Multiple Linear Regression of Harmful Behaviors Scale Total Score (N = 292)

Characteristic	Harmful Behaviors Scale Total
Age	-.133*
Gender (0 = male, 1 = female)	-.052
Chart diagnosis of dementia (0 = no, 1 = yes)	.207*
Taking regular psychotropics (0 = no, 1 = yes)	.080
Taking as needed psychotropics (0 = no, 1 = yes)	.095*
FAST	.206*
EBAS-Dep	-.075
Hamilton suicide	.121*

* Indicates variables that were entered and retained in the equation.

FAST = Functional Assessment Staging Scale; EBAS-Dep = Even Briefer Assessment Scale for Depression.

way, Julie-Anne, Kia-Ora, Maroubra Junction, Milford House, Phillip House, and Sir Joseph Banks nursing homes; and to the residents and their families.

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