Analysis in Brief

May 2010 **Types of Care**

Depression Among Seniors in Residential Care

Highlights of Study Findings

- In a sample of nearly 50,000 seniors living in residential care facilities (such as long-term care, nursing or personal care homes) in five Canadian jurisdictions, nearly half (44%) had a diagnosis and/or symptoms of depression.
- Residents with symptoms of depression, whether they had a diagnosis or not, experienced significant medical, social, functional and quality-of-life challenges. These included unstable health conditions, decline in self-sufficiency, cognitive impairment, conflict or withdrawal, sleep disturbance, pain and other serious health issues.
- While the symptoms of depression appeared to be associated with many negative health and social factors, residents with a diagnosis of depression were much more likely to receive antidepressant medications.
- These results highlight the importance of identifying seniors in residential care who may be suffering from depression. They also underscore the value of the Continuing Care Reporting System (CCRS) and the RAI-MDS 2.0© assessment in identifying seniors who are at risk for poor outcomes. Caregivers get real-time information that supports early identification of problems and guides best practice in care planning; managers get facility- and jurisdiction-level information to inform policy and planning.

Who We Are

Established in 1994, CIHI is an independent, not-for-profit corporation that provides essential information on Canada's health system and the health of Canadians. Funded by federal, provincial and territorial governments, we are guided by a Board of Directors made up of health leaders across the country.

Our Vision

To help improve Canada's health system and the well-being of Canadians by being a leading source of unbiased, credible and comparable information that will enable health leaders to make better-informed decisions.

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Introduction

Depression is one of the leading causes of disability, representing significant costs to individuals, families and society. According to the World Health Organization (WHO), depression ranks third for global burden of disease and will be number two by 2020. The direct cost of managing chronic depression is estimated at twice the cost of managing hypertension and diabetes combined.[1] Given the increased burden of depression anticipated by the WHO, the situation looms as a particular challenge to the health care system.[2]

Diagnosis of depression in seniors varies according to care setting, with the lowest levels reported among people living in the community (1% to 5%) and the highest levels among those in long-term care facilities (14% to 42%).[3–6]

Another way of looking at depression is to document the presence of symptoms that may be indicative of depression. Symptom screening tools result in somewhat higher rates of depression, as they cast a wider net looking for those who may have clinically significant symptoms. The pattern of symptom rates remains the same as that for the diagnosis of depression, with the lowest levels in the community (3% to 26%) and the highest levels in long-term care settings (7% to 49%).[3, 4, 6]

A number of factors have been associated with late-life depression.[3–7] Because many of these factors, such as illness and loss of family, friends, social support or independence, are common among older people, it is sometimes assumed that depression is a natural part of aging. There is, in fact, continuing debate as to how depression relates to aging.[8] Diagnosis of depression has been reported to increase with age up to 65 years and then decrease in prevalence.[9–12]

Some studies suggest that depression sometimes goes unidentified and untreated in elderly individuals, including those in long-term care homes.[4, 13–16] In studies of depression and mortality, the odds of dying were 1.5 to 2 times greater in elderly people with depression compared to those without depression.[3, 6, 12, 17–20]

This Analysis in Brief looks at symptoms and diagnoses of depression in a sample of nearly 50,000 seniors living in 550 Canadian residential care facilities (also known as long-term care, nursing or personal care homes) in Nova Scotia, Ontario, Manitoba, Saskatchewan and the Yukon. Relationships between depression and medical conditions, functional and social factors, quality of life and use of health services are explored, comparing those who have symptoms and/or a diagnosis of depression with other residents. The analysis concludes with a discussion of opportunities to improve the quality of care for seniors with symptoms of depression using new information available from the CCRS at CIHI.

Methods

The Continuing Care Reporting System

The CCRS was launched by CIHI in 2003–2004 as a pan-Canadian reporting system to support comparative reporting on quality of care in hospital-based and residential continuing care (facilities that provide 24-hour nursing care). The interRAI Resident Assessment Instrument Minimum Data Set, Version 2.0 (RAI-MDS 2.0), the foundation data standard for the CCRS, is being implemented in eight jurisdictions across the country. There are currently more than one million RAI-MDS 2.0 assessments in the database, representing a rich source of high-quality data on clinical outcomes and resource use. Quarterly eReports from the CCRS provide hospitals and residential care homes with comparative information to support quality of care and program planning.

RAI-MDS 2.0

The RAI-MDS 2.0 is a comprehensive assessment that documents the clinical and functional characteristics of residents, including measures of cognition, communication, vision, mood and behaviour, psychosocial well-being, physical functioning, continence, disease diagnoses, nutritional status, skin condition, medications and special treatments and procedures. The RAI-MDS 2.0 has undergone reliability and validity testing in a number of countries worldwide, including Canada.[21–28]

The RAI-MDS 2.0 assessment is completed upon admission to the facility and every three months thereafter, or more frequently if the person experiences a significant change in clinical status. The assessment is captured electronically and provides real-time feedback for facility staff to support care planning and monitoring. It also provides facility- and jurisdiction-level data to support system management, quality improvement and policy-making.

Defining Depression

Depression Diagnosis

A diagnosis of depression is captured in the RAI-MDS 2.0 assessment if it is documented in the clinical record and has a relationship to current activities of daily living, mood, cognition or behaviour status.

Depression Symptoms

The Depression Rating Scale (DRS) is derived from a series of RAI-MDS 2.0 assessment items for use by clinicians as a screening tool for depression. It is a summative measure of seven depressive symptoms: negative statements, persistent anger, expressions of unrealistic fears, repetitive health complaints, repetitive anxious complaints, sad/pained/worried facial expression and tearfulness. The scale has been found to perform well against several gold-standard depression scales (such as the Geriatric, Hamilton and Cornell depression scales).[29]

Scores of 3 or higher on the DRS have been shown to be indicative of depression, based on diagnoses made by a geriatric psychiatrist.[29, 30] Acceptable levels of internal consistency have been reported in studies of nursing home residents.[29–31]

To simplify subsequent tables and graphs, we will refer to residents who have a DRS score of 3 or higher as residents with symptoms of depression and those with a DRS score of 0 to 2 as residents with no symptoms. Some of the residents in this latter group displayed one or two symptoms of depression. While they did not exceed the threshold score for the purpose of this analysis, these residents were flagged through the RAI-MDS 2.0 outputs for individualized care planning for their symptoms.

The Sample

This analysis was based on information from 49,089 unique residents age 65 and older who were living in residential care homes in Nova Scotia, Ontario, Manitoba, Saskatchewan and the Yukon. The most recent full RAI-MDS 2.0 assessment from 2008–2009 was used for each resident. The average age of residents in the sample was 85, and 7 out of 10 residents were female.

Factors to Consider in Association With Depression

A literature review guided the selection of RAI-MDS 2.0 items and scales that were included in the analysis for a possible association with depression. The full list and results may be found in Appendix A. Appendix B provides a list of clinical outcome scales derived from the RAI-MDS 2.0 assessment and used in the analysis. The items and scales of particular interest are presented graphically in the results below.

Statistical Considerations

The analysis looked at the differences between residents who had a depression diagnosis and/or clinically significant symptoms of depression (DRS score of 3 or higher) and those who had no symptoms or diagnoses. Chi-square tests were conducted to determine whether differences were statistically significant across these subgroups of residents.

One of the strengths of this analysis is the large sample size, which provides tremendous power to detect statistical differences among different groups. A downside of such power is that it facilitates the detection of very small differences, which may not be practically relevant. As such, achievement of statistical significance may not be enough to infer practical clinical or fiscal consequences.

Another limitation of this analysis is the cross-sectional nature of the data, which prohibits any interpretation of direction of effect. In other words, from the current analysis we do not know whether one factor causes or leads to another, only that they are associated with one another. The analysis also did not take into account how long the resident had been in the facility and whether those just entering a residential care facility might have different characteristics and levels of depression than those who have been residents for multiple years.

Finally, this study does not attempt to determine whether seniors with depressive symptoms and no diagnoses are under-diagnosed or whether the screening tool may be less specific for seniors of advanced age. In any case, those with symptoms, whether or not they had a diagnosis, shared important characteristics.

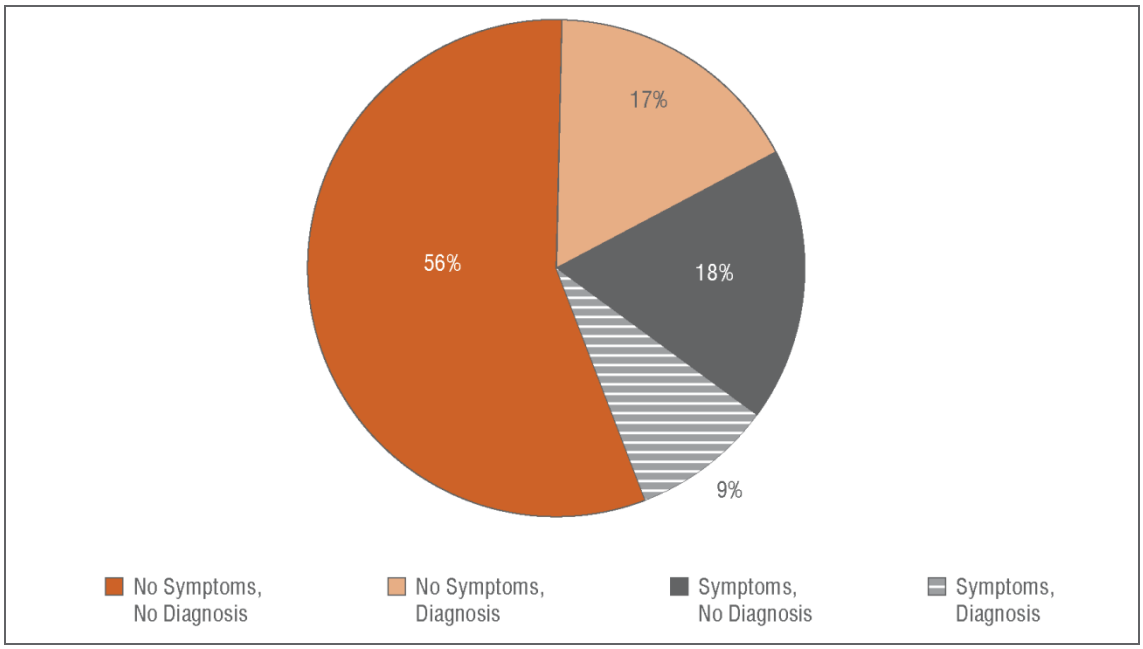
Results

Prevalence of Depression Among Seniors in Residential Care

Figure 1 illustrates that nearly half of the residents (44%) in the sample were assessed with a diagnosis and/or symptoms of depression. More than one-quarter (26%) of residents had a diagnosis of depression; 17% had a diagnosis of depression and no symptoms recorded on their assessment. The assumption is that their condition was being effectively managed.

Figure 1

Distribution of Depression Diagnoses and Symptoms in Residents Age 65 and Older

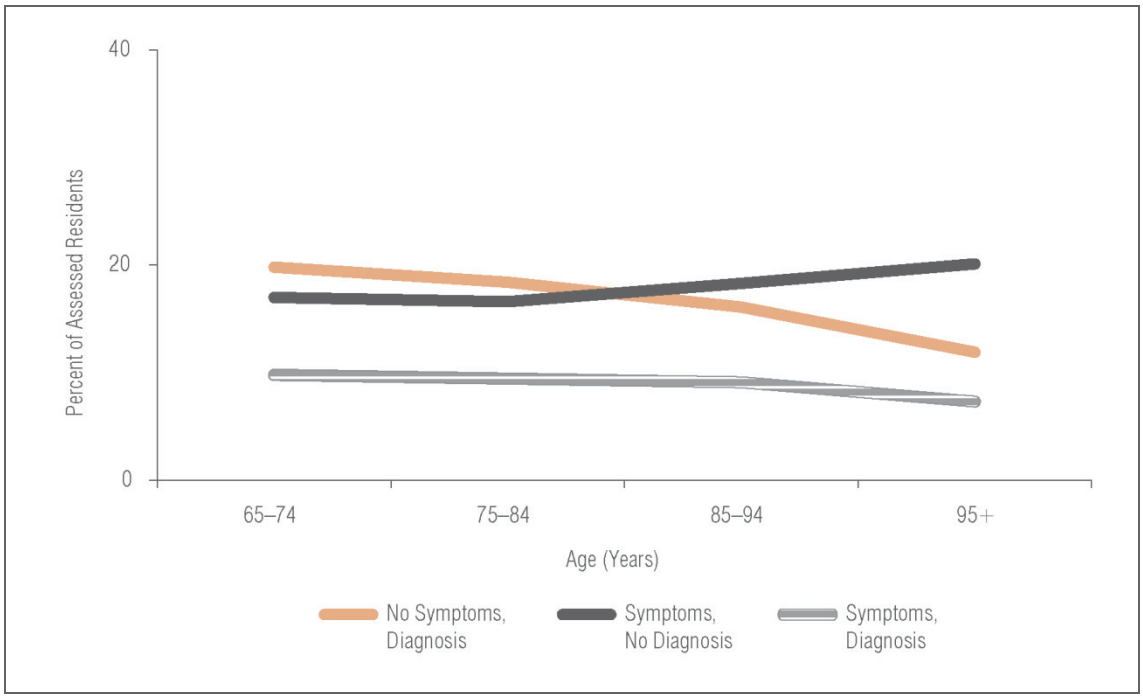


Source
Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Figure 2 illustrates the relationship between age, depression diagnosis and symptoms. Consistent with the literature, the proportion of seniors with a diagnosis of depression decreased after age 65. However, the proportion of seniors with symptoms of depression and no depression diagnosis increased from 17% among those age 65 to 74 to 20% of those age 95 and older.

Figure 2

Distribution of Diagnosis and Symptoms of Depression in Residents Age 65 and Older, by Age



Source
Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Factors Associated With Depression Among Seniors Living in Residential Care

The literature review suggested numerous factors associated with depression in seniors. For the purpose of this analysis, the relevant information available from the RAI-MDS 2.0 was clustered into categories: medical, social, functional, quality of life and resource utilization. The distributions for each relevant variable, by depression diagnosis and symptoms of depression, may be found in Appendix A.

Medical Factors

Figure 3 illustrates the distribution of key factors in the medical domain among residents by combinations of the presence or absence of depression diagnoses and symptoms.

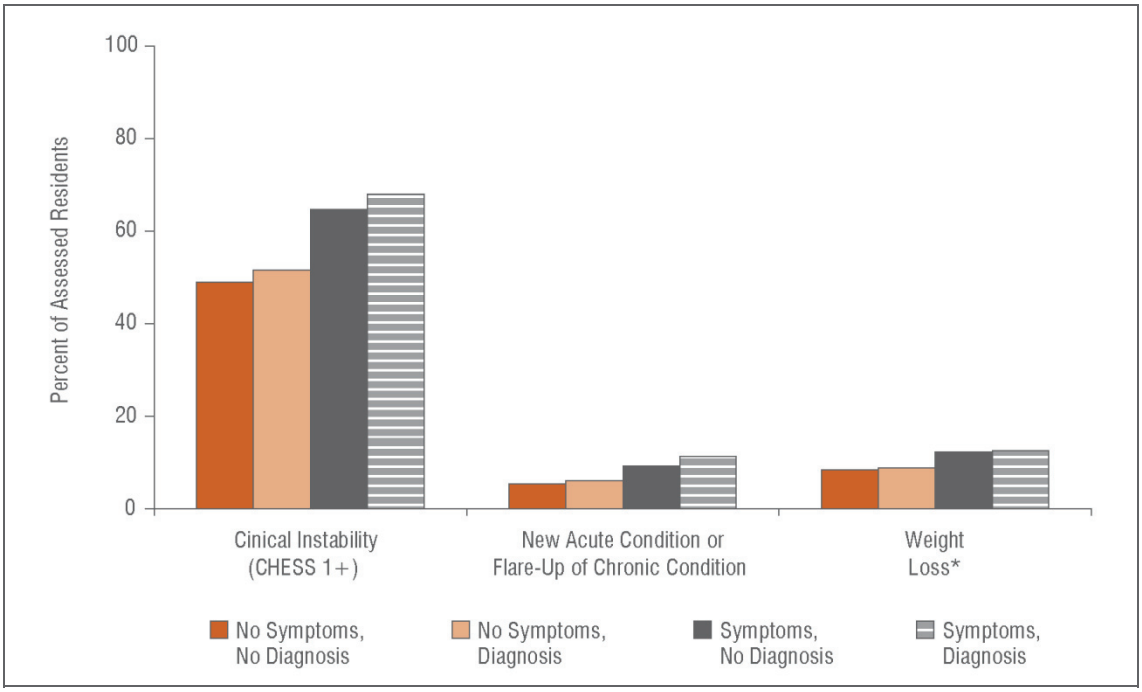
The Changes in End-Stage Disease, Signs and Symptoms (CHESS) scale, derived from the RAI-MDS 2.0 assessment, measures health instability and predicts adverse outcomes, including death.[32] Residents with symptoms of depression were more likely to have signs of health instability than those without symptoms. This held true whether or not they had a diagnosis of depression.

Residents with symptoms of depression were also more likely to have a new acute health condition or a flare-up of a chronic condition than those without symptoms.

Weight loss, also associated with adverse outcomes in this population, appeared to be more strongly associated with symptoms of depression than with a diagnosis of depression.

Figure 3

Medical Factors Among Residents Age 65 and Older, by Diagnosis and Symptoms of Depression



Note

* Excludes residents at admission if weight loss is unknown.

Source

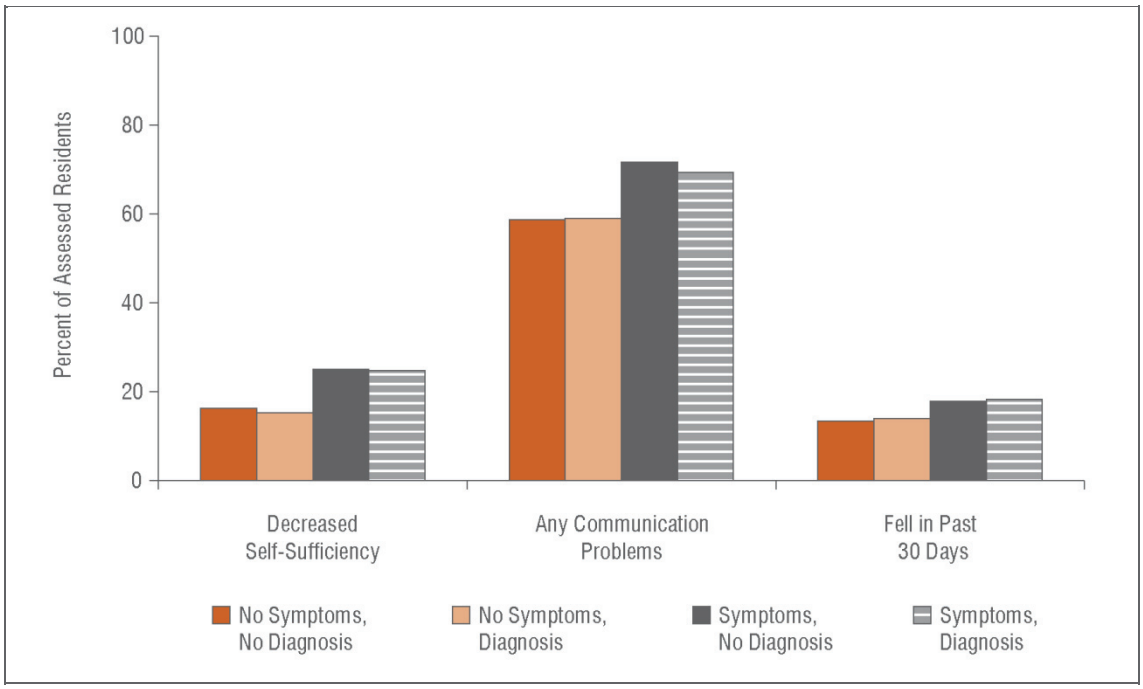
Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Functional Factors

Residents with symptoms of depression also experienced greater difficulties in functional domains, compared to those with no symptoms. Figure 4 illustrates that a greater proportion of residents with symptoms experienced deterioration in self-sufficiency, had trouble communicating and had experienced a fall in the 30 days prior to assessment.

Figure 4

Functional Factors Among Residents Age 65 and Older, by Diagnosis and Symptoms of Depression



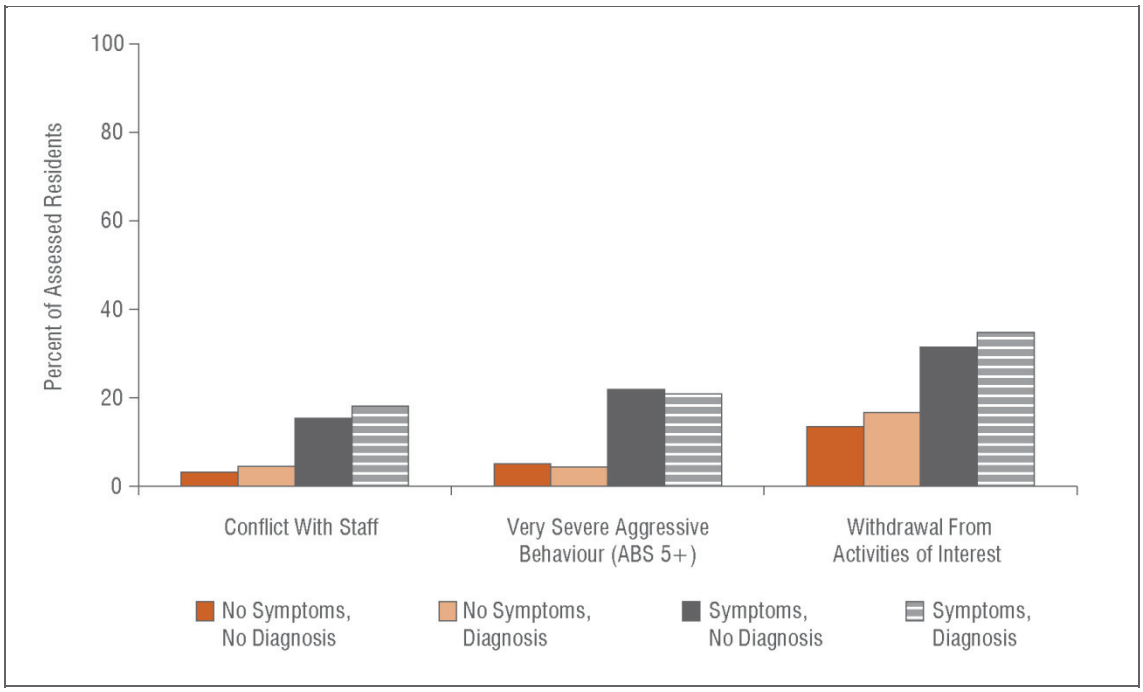
Source
Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Social Factors

Figure 5 illustrates that social factors appeared to be strongly associated with symptoms of depression, regardless of diagnosis. There were large differences between residents with symptoms and those without in the prevalence of conflict with staff, aggressive behaviours and withdrawal from activities of interest.

Figure 5

Social Factors Among Residents Age 65 and Older, by Diagnosis and Symptoms of Depression



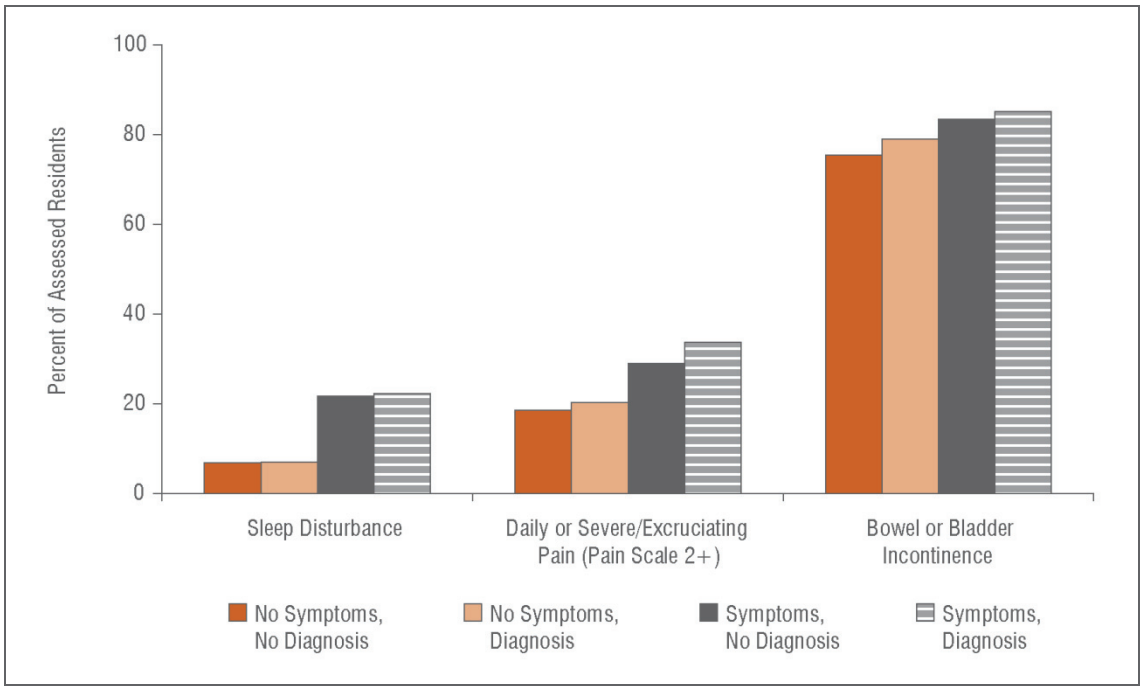
Source
Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Quality-of-Life Factors

Figure 6 illustrates that the proportion of residents with sleep disturbance was three times greater in those with symptoms of depression than in those with no symptoms, regardless of diagnosis. Symptoms also seem to be more strongly associated with daily severe or excruciating pain and with incontinence.

Figure 6

Quality-of-Life Factors Among Residents Age 65 and Older, by Diagnosis and Symptoms of Depression



Source
Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Resource Utilization

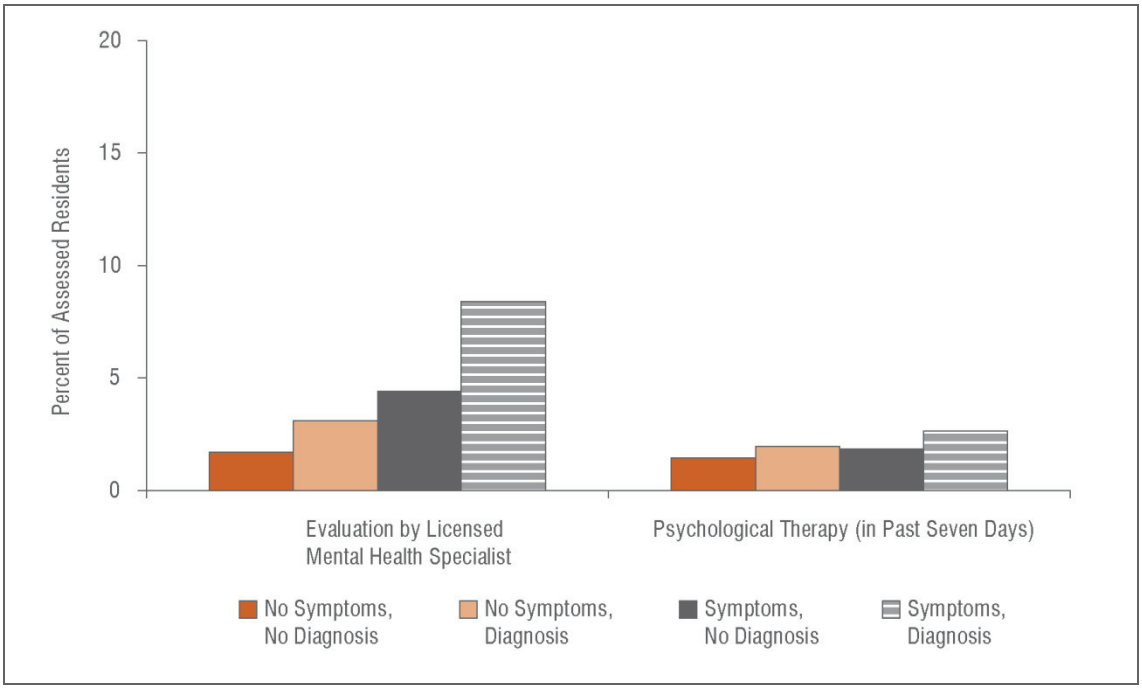
Figure 7 illustrates the proportions of residents receiving mental health evaluation and treatment.

A small proportion of residents, in particular those with symptoms of depression, received an evaluation by a licensed mental health practitioner in the 90 days prior to the assessment. The rate was nearly double for those who were exhibiting symptoms and had a diagnosis of depression compared to residents who were exhibiting symptoms of depression and had no diagnosis.

Very few residents received psychological therapy, but the highest proportion was among those with both symptoms and a diagnosis. Those with symptoms in the seven days prior to the assessment and no diagnosis were less likely to receive therapy than residents with a diagnosis.

Figure 7

Mental Health Services Received by Residents Age 65 and Older, by Diagnosis and Symptoms of Depression

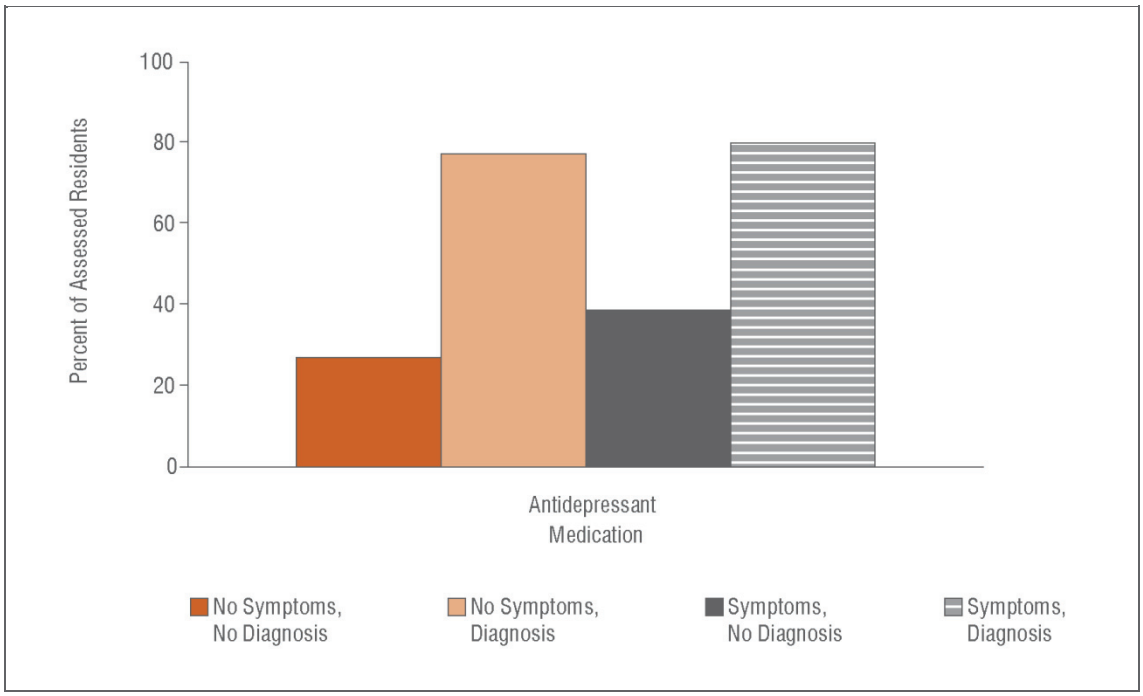


Source
Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Receipt of antidepressant medication appeared to be strongly associated with a diagnosis of depression, as shown in Figure 8. There was a twofold difference in the rates of antidepressant medication use between residents with symptoms of depression only and those with a diagnosis.

Figure 8

Use of Antidepressant Medications by Residents Age 65 and Older, by Diagnosis and Symptoms of Depression



Source
Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Discussion

This study reveals important findings with implications for seniors, families and staff in residential care, as well as system-level policy-makers and planners.

1. In a sample of nearly 50,000 seniors living in residential care (such as long-term, nursing or personal care homes) in five Canadian jurisdictions, nearly half (44%) had a diagnosis and/or symptoms of depression.

   This finding is consistent with previously reported data.[3–6] There are significant clinical, fiscal and quality-of-life consequences related to a combined prevalence of depression diagnoses and symptoms approaching one-half of seniors in residential care.

   This study confirmed previous research findings that rates of a depression diagnosis decline after the age of 65. However, the analysis also revealed that symptoms of depression in the absence of a diagnosis increased after this age.

   There are many individual and system-level factors contributing to non-diagnosis of depression in seniors.[33] One possible explanation is that the criteria physicians use to arrive at a diagnosis of depression[34] do not capture some of the elderly people suffering from clinically significant symptoms of depression.[5, 35] Many older people do not identify depressed mood as a symptom;[36] instead, they may complain of physical symptoms or that they simply have no pleasure in their lives.[37]

In one study of long-term care residents in Ontario, it was suggested that residents who presented with an inability to find pleasure in life, in the absence of depressed mood, or what is referred to as "depression without sadness," were particularly vulnerable to the under-recognition of depression.[38] Seniors themselves may accept depression as a normal part of aging, as may their caregivers.

Another possibility is that depression symptoms in the absence of a diagnosis may reflect a mild depressive condition rather than under-diagnosis of clinical depression. However, it is still important to address this condition as it has been demonstrated through this study, and others, to be associated with functional impairment and disability, as well as diminished life satisfaction, psychological distress[39, 40] and the need for increased medical services.

2. Residents with symptoms of depression, whether they had a diagnosis or not, experienced significant medical, social, functional and quality-of-life challenges. These included unstable health conditions, decline in self-sufficiency, cognitive impairment, conflict or withdrawal, sleep disturbance, pain and other problems.

3. Few residents received evaluations by a mental health specialist or psychological therapy. Recreation therapy was also rare. While the symptoms of depression appear to be driving the association with many negative health and social factors, residents with a diagnosis of depression were much more likely to receive antidepressant medications.

Conclusion

These results highlight the importance of identifying seniors in residential care who may be suffering from depression. They also underscore the value of the CCRS and RAI-MDS 2.0 in identifying seniors who are at risk for poor outcomes. In addition to the scales embedded within the RAI-MDS 2.0, there are interRAI Clinical Assessment Protocols (CAPs) available to clinicians in real time, which identify residents who may benefit from further assessment and adjustments to their care plan.

The Mood CAP, which uses the Depression Rating Scale, flags residents who may be at risk of depression and provides clinical supports to inform the care plan. The scale then helps caregivers monitor the progress of these residents and their responses to treatment. These tools are designed to ensure that seniors with signs of depression are identified and receive appropriate and effective care.

CCRS eReports provide comparative information at facility, regional and provincial/territorial levels to shed light on continuing care populations and allow for benchmarking of quality. Among the new set of interRAI quality indicators included in CCRS reports is a risk-adjusted measure of decline in mood as measured by the DRS.

With the rich source of data available through the CCRS, next steps might involve multivariate analyses to determine the relative contributions of factors independently associated with depression and/or poor outcomes. An analysis comparing newly admitted residents with long-stay residents might shed light on some key differences between these two types of residents and how depression may change over time in this population. As well, replication of these analyses for seniors receiving home care and hospital-based continuing care, using other CIHI data holdings, would shed further light on depression in seniors receiving care across the continuum.

Appendix A: Medical, Social, Functional and Quality-of-Life Factors and Resource Utilization in Residents Age 65 and Older, by Diagnosis and Symptoms of Depression

Characteristic	No Symptoms, No Diagnosis	No Symptoms, Diagnosis	Symptoms, No Diagnosis	Symptoms, Diagnosis	p
Medical					
Clinical Instability (CHESS 1+)	49.0	51.6	64.7	68.0	<0.0001
Any Dementia	54.6	56.1	64.0	62.2	<0.0001
5+ Comorbid Conditions	39.5	51.1	46.6	58.2	<0.0001
Any Musculoskeletal Diseases*	51.0	56.8	55.0	62.8	<0.0001
Any Cardiac Disease	65.0	69.8	65.0	68.6	<0.0001
New Acute Condition or Flare-Up of Chronic Condition	5.4	6.1	9.2	11.3	<0.0001
Diabetes	22.6	23.8	21.2	22.6	0.0007
Respiratory Conditions	14.0	17.7	15.0	18.7	<0.0001
Thyroid Disease	14.8	18.7	17.0	20.2	<0.0001
Anxiety	3.2	11.3	6.6	18.1	<0.0001
Weight Loss†	8.5	8.8	12.3	12.5	<0.0001
Cancer	9.5	9.4	9.8	9.3	0.73
Functional					
Decreased Self-Sufficiency	16.2	15.2	25.0	24.7	<0.0001
Moderate to Severe Cognitive Impairment (CPS 3+)	54.3	54.8	68.7	67.1	<0.0001
Extensive to Dependent Functionally (ADL 3–6)	67.9	72.0	78.3	79.6	<0.0001
Very Severe Aggressive Behaviour (ABS 5+)	5.1	4.4	21.9	20.9	<0.0001
Any Communication Problems	58.8	59.0	71.7	69.4	<0.0001
Vision Difficulty	45.4	45.5	51.6	52.5	<0.0001
Fell in the Past 30 Days	13.4	14.0	17.9	18.3	<0.0001
Social					
Withdrawal From Activities of Interest	13.4	16.6	31.4	34.8	<0.0001
Reduced Social Interaction	18.1	23.0	36.6	40.0	<0.0001
Strong Identification With Past Roles	27.2	28.9	35.2	36.7	<0.0001
Daily Life Different From Previous Life in Community	16.6	17.8	24.7	26.6	<0.0001
Sad/Angry Over Lost Roles/Status	7.9	11.2	19.8	25.4	<0.0001
Conflict With Staff	3.3	4.5	15.4	18.1	<0.0001
Unhappy With Roommate	1.7	2.5	3.6	4.1	<0.0001
Unhappy With Other Residents	3.9	5.0	13.0	13.2	<0.0001
Conflict With Family	3.3	4.6	11.8	14.7	<0.0001
No Contact With Family	4.9	5.5	9.0	10.4	<0.0001
Recent Loss of Family/Friend	1.6	2.2	2.7	3.5	<0.0001
Doesn't Adjust Easily to Change	13.2	17.1	32.6	36.5	<0.0001
Quality of Life					
Sleep Disturbance	6.7	7.0	21.7	22.3	<0.0001
Daily or Severe/Excruciating Pain (Pain Scale 2+)	18.6	20.3	29.0	33.7	<0.0001
Any Incontinence (Bladder or Bowel)	75.5	79.0	83.5	85.1	<0.0001
Bladder Incontinence	72.0	75.7	79.9	82.5	<0.0001
Bowel Incontinence	54.3	55.9	62.0	62.4	<0.0001

Continued on next page

Characteristic	No Symptoms, No Diagnosis	No Symptoms, Diagnosis	Symptoms, No Diagnosis	Symptoms, Diagnosis	p
Resource Utilization					
Any Hospitalization in the Past 90 Days	16.1	12.5	15.6	13.0	<0.0001
Any Emergency Room Visits in the Past 90 Days	11.7	9.7	11.9	11.2	<0.0001
Any Physician Visits in the Past 14 Days	66.3	66.9	67.6	69.0	0.002
Any Psychological Therapy in the Past 7 Days	1.4	2.0	1.9	2.6	<0.0001
Evaluation by Licensed Mental Health Specialist	1.7	3.1	4.4	8.4	<0.0001
Antidepressant Medication	27.0	77.3	38.7	80.1	<0.0001

Notes

* Excludes pathological bone conditions.
† Excludes residents at admission if weight loss is unknown.
Symptoms: DRS 3+.
P-value refers to significance of chi-square test.

Source

Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

Appendix B: RAI-MDS 2.0 Outcome Scales

Embedded within the RAI-MDS 2.0 are a number of validated scales, including the following:

i. Changes in Health, End-Stage Disease, Signs and Symptoms (CHESS) Scale (scores range from 0 to 5)[32]

ii. Activities of Daily Living (ADLs) Self-Performance Hierarchy Scale (scores range from 0 to 6)[41]

iii. Cognitive Performance Scale (CPS) (scores range from 0 to 6)[26]

iv. Pain Scale (scores range from 0 to 3)[21]

v. Depression Rating Scale (DRS) (scores range from 0 to 14)[29]

vi. Aggressive Behaviour Scale (ABS) (scores range from 0 to 12)[42]

vii. Index of Social Engagement (ISE) (scores range from 0 to 6)[43]

For all scales except the ISE, higher scores indicate more severe symptoms.

References

1. J. Scott and B. Dickey, "Global Burden of Depression: The Intersection of Culture and Medicine," *British Journal of Psychiatry* 183 (2003): pp. 92–94.
2. C. J. Murray and A. D. Lopez, *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability From Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020* (Cambridge, Massachusetts: Harvard University Press, 1996).
3. D. G. Blazer, "Depression in Late Life: Review and Commentary," *Journals of Gerontology Series A—Biological Sciences & Medical Sciences* 58 (2003): pp. 249–265.
4. J. K. Djernes, "Prevalence and Predictors of Depression in Populations of Elderly: A Review," *Acta Psychiatrica Scandinavica* 113 (2006): pp. 372–387.
5. A. Fiske et al., "Depression in Older Adults," *Annual Review of Clinical Psychology* 5 (2009): pp. 363–389.
6. C. F. Hybels and D. G. Blazer, "Epidemiology of Late-Life Mental Disorders," *Clinics in Geriatric Medicine* 19 (2003): pp. 663–696.
7. D. S. Charney et al., "Depression and Bipolar Support Alliance Consensus Statement on the Unmet Needs in Diagnosis and Treatment of Mood Disorders in Late Life," *Archives of General Psychiatry* 60 (2003): pp. 664–672.
8. S. Palsson and I. Skoog, "The Epidemiology of Affective Disorders in the Elderly: A Review," *International Clinical Psychopharmacology* 12, Suppl. 7 (1997): pp. S3–S13.
9. D. S. Hasin et al., "Epidemiology of Major Depressive Disorder: Results From the National Epidemiologic Survey on Alcoholism and Related Conditions," *Archives of General Psychiatry* 62 (2005): pp. 1097–1106.
10. R. C. Kessler et al., "Prevalence, Severity, and Comorbidity of 12-Month DSM-IV Disorders in the National Comorbidity Survey Replication," *Archives of General Psychiatry* 62 (2005): pp. 617–627.
11. R. C. Kessler et al., "Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the National Comorbidity Survey Replication," *Archives of General Psychiatry* 62 (2005): pp. 593–602.
12. S. B. Patten et al., "Descriptive Epidemiology of Major Depression in Canada," *Canadian Journal of Psychiatry* 51 (2006): pp. 84–90.
13. C. I. Cohen et al., "Depression Among African American Nursing Home Patients With Dementia," *American Journal of Geriatric Psychiatry* 6 (1998): pp. 162–175.
14. M. J. Crawford et al., "The Recognition and Treatment of Depression in Older People in Primary Care," *International Journal of Geriatric Psychiatry* 13 (1998): pp. 172–176.
15. B. D. Lebowitz et al., "Diagnosis and Treatment of Depression in Late Life. Consensus Statement Update," *JAMA* 278 (1997): pp. 1186–1190.
16. J. Teresi et al., "Prevalence of Depression and Depression Recognition in Nursing Homes," *Social Psychiatry & Psychiatric Epidemiology* 36 (2001): pp. 613–620.
17. D. G. Blazer et al., "The Association of Depression and Mortality in Elderly Persons: A Case for Multiple, Independent Pathways," *Journals of Gerontology Series A—Biological Sciences & Medical Sciences* 56 (2001): pp. M505–M509.
18. H. Lavretsky et al., "Predictors of Two-Year Mortality in a Prospective 'UPBEAT' Study of Elderly Veterans With Comorbid Medical and Psychiatric Symptoms," *American Journal of Geriatric Psychiatry* 10 (2002): pp. 458–468.

19. R. A. Schoevers et al., "Association of Depression and Gender With Mortality in Old Age. Results From the Amsterdam Study of the Elderly (AMSTEL)," *British Journal of Psychiatry* 177 (2000): pp. 336–342.

20. R. Schulz et al., "Association Between Depression and Mortality in Older Adults: The Cardiovascular Health Study," *Archives of Internal Medicine* 160 (2000): pp. 1761–1768.

21. B. Fries et al., "Pain in U.S. Nursing Homes: Validating a Pain Scale for the Minimum Data Set," *The Gerontologist* 41 (2001): pp. 173–179.

22. S. Hartmaier et al., "Validation of the Minimum Data Set Cognitive Performance Scale: Agreement With the Mini-Mental State Examination," *Journal of Gerontology: Medical Sciences* 50A (1995): pp. M128–M133.

23. C. Hawes et al., "Reliability Estimates for the Minimum Data Set for Nursing Home Resident Assessment and Care Screening (MDS)," *The Gerontologist* 35 (1995): pp. 172–178.

24. M. P. Lawton et al., "Psychometric Characteristics of the Minimum Data Set II: Validity," *Journal of the American Geriatric Society* 46 (1998): pp. 736–744.

25. V. Mor et al., "The Structure of Social Engagement Among Nursing Home Residents," *The Gerontologist* 50B (1995): pp. 1–8.

26. J. Morris et al., "MDS Cognitive Performance Scale," *Journal of Gerontology: Medical Sciences* 49 (1994): pp. M174–M182.

27. J. Morris et al., "A Commitment to Change: Revision of HCFA's RAI," *Journal of the American Geriatric Society* 45 (1997): pp. 1011–1016.

28. M. Snowden et al., "Validity and Responsiveness of the Minimum Data Set," *Journal of the American Geriatric Society* 47 (1999): pp. 1000–1004.

29. A. B. Burrows et al., "Development of a Minimum Data Set–Based Depression Rating Scale for Use in Nursing Homes," *Age and Ageing* 29 (2000): pp. 165–172.

30. M. Koehler et al., "Measuring Depression in Nursing Home Residents With the MDS and GDS: An Observational Psychometric Study," *BMC Geriatrics* 5 (2005), accessed on April 16, 2010, from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC546185/>.

31. J. P. Hirdes et al., "The Resident Assessment Instrument—Mental Health (RAI-MH): Inter-Rater Reliability and Convergent Validity," *Journal of Behavioral Health Services & Research* 29 (2002): pp. 419–432.

32. J. P. Hirdes et al., "The MDS-CHESS Scale: A New Measure to Predict Mortality in Institutionalized Older People," *Journal of the American Geriatric Society* 51 (2003): pp. 96–100.

33. L. Martin et al., "Predictors of a New Depression Diagnosis Among Older Adults Admitted to Complex Continuing Care: Implications for the Depression Rating Scale (DRS)," *Age and Ageing* 37, 1 (2008): pp. 51–56.

34. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (Washington, D.C.: American Psychiatric Association, 2000).

35. D. G. Blazer, "Is Depression More Frequent in Late Life? An Honest Look at the Evidence," *American Journal of Geriatric Psychiatry* 2 (1994): pp. 193–199.

36. J. J. Gallo and P. V. Rabins, "Depression Without Sadness: Alternative Presentations of Depression in Late Life," *American Family Physician* 60 (1999): pp. 820–826.

37. J. J. Gallo et al., "Depression Without Sadness: Functional Outcomes of Nondysphoric Depression in Later Life," *Journal of the American Geriatrics Society* 45 (1997): pp. 570–578.

38. L. Clyburn, "The Role of Symptom Presentation in the Diagnosis and Treatment of the Depressed Elderly: A Closer Look at Anhedonia and Dysphoria," *Dissertation Abstracts International: Section B: The Sciences and Engineering* 66 (2006).

39. A. T. F. Beekman et al., "Consequences of Major and Minor Depression in Later Life: A Study of Disability, Well-Being and Service Utilization," *Psychological Medicine* 27 (1997): pp. 1397–1409.

40. B. Geiselman and M. Bauer, "Subthreshold Depression in the Elderly: Qualitative or Quantitative Distinction?," *Comprehensive Psychiatry* 41 (2000): pp. 32–38.

41. J. N. Morris et al., "Scaling ADLs Within the MDS," *Journals of Gerontology Series A—Biological Sciences & Medical Sciences* 54A (1999): pp. M546–M553.

42. C. Perlman and J. Hirdes, "The Aggressive Behaviour Scale: A New Scale To Measure Aggression on the Minimum Data Set," *Journal of the American Geriatrics Society* 56 (2008): pp. 2298–2303.

43. M. Schroll et al., "An International Study of Social Engagement Among Nursing Home Residents," *Age and Ageing* 26, Suppl. 2 (1997): pp. 55–59.