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Caring for Nursing Home Residents With Behavioural Symptoms: Information to Support a Quality Response

Summary

Nursing home residents who display behavioural symptoms, such as verbal or physical abuse, social inappropriateness, resistance to care or wandering, can be a source of distress to themselves, other residents and staff members.

This Analysis in Brief highlights the use of an internationally validated clinical assessment instrument, the RAI-MDS 2.0© (Resident Assessment Instrument Minimum Data Set 2.0), to inform the care of residents with behavioural symptoms. It also sheds light on the unique characteristics and needs of this population.

The data for the analysis were submitted to the Canadian Institute for Health Information (CIHI) between 2003 and 2007 by five Nova Scotia nursing homes. These organizations participate in the Continuing Care Reporting System (CCRS), which provides information for supporting quality care, system planning and accountability for residential continuing care in Canada.

Nearly half (45%) of the 699 residents in the sample exhibited one or more behavioural symptoms, which included verbal or physical abuse, social inappropriateness, resistance to care and wandering.

Resistance to care was the most common behaviour (30% of residents), while physical abuse was least prevalent, at 10% of residents. Analysis revealed that a number of characteristics were associated with residents exhibiting aggressive behaviours, including signs of delirium or depression. A combination of these two factors resulted in a seven-fold increase in the rate of aggressive behaviour.

One in five residents in the sample exhibited wandering behaviour. Cognitive impairment was the most significant factor, along with a diagnosis of Alzheimer's disease or other dementia and the physical ability to move around the facility. Women were more likely to wander than men.

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The findings illustrate the value of the RAI-MDS 2.0© assessment, used in Nova Scotia and in other jurisdictions across the country for identifying residents exhibiting or at risk for exhibiting behavioural symptoms. It provides real-time information to the care providers for individualized care planning, which in turn supports enhanced quality of life for the resident and a safer environment for all.

This analysis contributes to awareness of the factors associated with behavioural symptoms that may respond to clinical interventions and prevention strategies. The information may also be used to support organizational and system planning for an aging population.

As CCRS implementation in the residential care sector continues across Canada, the reporting system will support further analysis of the impact of clinical interventions on behavioural symptoms as well as other important research on outcomes.

Introduction

Nursing home residents who display behavioural symptoms, such as verbal or physical abuse, social inappropriateness, resistance to care or wandering, can be a source of distress to themselves, other residents and staff members.

In Canada, according to the 2005 National Survey of the Work and Health of Nurses, half (50%) of nurses working in long-term care facilities reported that they had been physically assaulted by a patient in the previous year. Emotional abuse from a patient was also reported by almost half (48%) of nurses for the same work setting.¹

The data for this Analysis in Brief were submitted to CIHI between April 2003 and March 2007 by five Nova Scotia nursing homes. These organizations participate in the Continuing Care Reporting System (CCRS), which provides information for supporting quality care, system planning and accountability for residential continuing care in Canada.

The Technical Notes found at the end of this report provide further detail on the data source and populations used for analysis.

This analysis highlights the use of an internationally validated clinical assessment instrument, the RAI-MDS 2.0©, to inform the care of residents with behavioural symptoms. interRAI is a collaborative of researchers working in more than 20 countries who promote evidence-based clinical practice and policy decisions with high-quality data about the characteristics and outcomes of persons served across the health system.

As one component of a comprehensive clinical assessment, the RAI-MDS 2.0© captures information on five behavioural symptoms: verbal or physical abuse, social inappropriateness, resistance to care and wandering.



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Overall, 45% of the sample of 699 nursing home residents from five facilities exhibited at least one of these symptoms in the seven-day period prior to their most recent assessment. This prevalence is similar to that documented in studies of nursing homes in the United States.

The detailed analysis explores these behavioural symptoms in two groups: residents with behaviours that may be considered aggressive and residents who wander with no discernable purpose. While there are residents who wander and exhibit aggressive behaviours, there are some significant differences in the characteristics of these two groups of residents that suggest distinct care and system planning implications.

Aggressive Behaviours

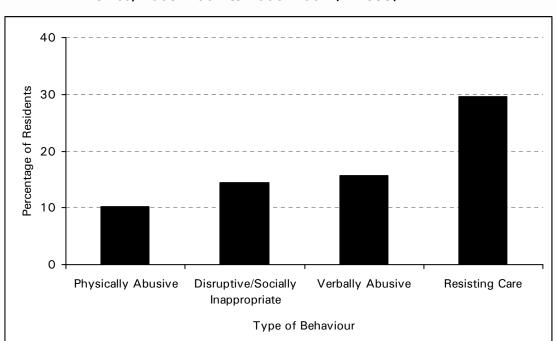
Four of the five behavioural symptoms captured in the RAI-MDS 2.0© may be considered aggressive: verbal abuse, physical abuse, socially inappropriate or disruptive behaviour and resistance to care.² Two out of five (40%) residents exhibited at least one of these behaviours.

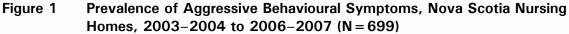
Figure 1 shows that resistance to care was the most prevalent behaviour: 30% of residents exhibited some type of resistance to care, such as resisting help with personal care or taking medications.ⁱ The proportion of residents who exhibited other aggressive behaviours ranged from 10% for physically abusive behaviour, such as hitting, scratching or sexually abusing others, to 16% for verbally abusive behaviour, such as screaming, threatening or cursing at staff or other residents.

i. This category does not include instances in which the resident has made an informed choice not to follow a course of care (for example, when a resident has exercised his or her right to refuse treatment and reacts negatively as staff try to reintroduce the treatment).²



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Source

Continuing Care Reporting System, 2003–2004 to 2006–2007, Canadian Institute for Health Information.

The Aggressive Behaviour Scale (ABS)—a clinical scale derived from the RAI-MDS 2.0©—summarizes information on the four behaviours. A resident's ABS score is based on the number and frequency of aggressive behaviours documented in the seven days prior to the assessment. It ranges from 0 to 12, with a higher score indicating a higher degree of aggressive behaviour.

The table below illustrates the distribution of the ABS score among those residents exhibiting aggressive behaviours, which represents 40% of all residents in the sample.

Table 1Distribution of Residents Exhibiting Aggressive Behaviours by
Aggressive Behaviour Scale Score, Nova Scotia Nursing Homes,
2003–2004 to 2006–2007

Aggressive Behaviour Scale Score	Number of Residents Exhibiting Aggressive Behaviours (%)	
1 or 2	147 (53%)	
3 to 5	87 (31%)	
6 or more	46 (16%)	
Total	280 (100%)	

Source

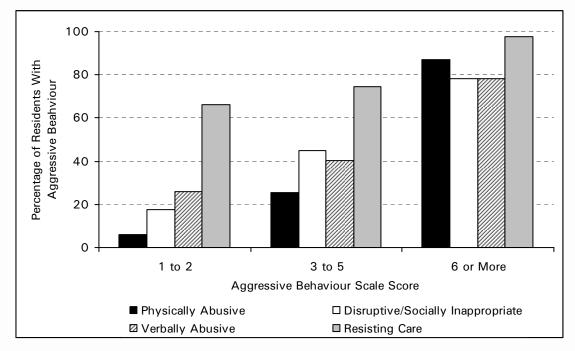
Figure 2 illustrates the differences in the types of aggressive behaviours exhibited, grouped by residents' ABS scores.

Among residents with an ABS score of 1 or 2, resisting care was by far the most frequent and, in the majority of cases, the only aggressive behaviour exhibited. Two-thirds of these residents resisted care. Just over a quarter (26%) of them were verbally abusive and only 6% were physically abusive.

Among residents with an ABS score of 3 to 5, the proportion of residents who were physically abusive increased to 1 in 4 (25%).

Among residents with an ABS score of 6 or more, the proportion of residents who were physically abusive increased to nearly 9 out of 10 residents (87%). The proportion of residents exhibiting verbally abusive and socially inappropriate/disruptive behaviour in this group was almost double that of the residents with an ABS score of 3 to 5. Just over half (54%) of the residents in this category exhibited all four aggressive behaviours.



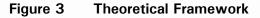


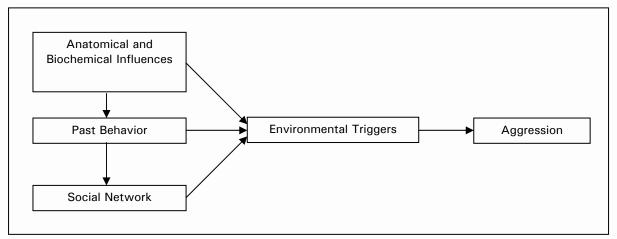
Source



Resident Characteristics Associated With Aggressive Behaviours

A number of studies have investigated factors associated with behavioural symptoms among nursing home residents.^{3, 4} A theoretical framework, developed by Dr. Ann Kolanowski to assess factors associated with aggressive behaviour in institutionalized elders,⁵ was used to analyze the characteristics of nursing home residents associated with the observed behaviours. The framework, shown in Figure 3, is composed of four domains: anatomical and biochemical influences, past behaviour, social network and environmental triggers.





Source

A. Kolanowski, "Aggressive Behavior in Institutionalized Elders: A Theoretical Framework," *The American Journal of Alzheimer's Disease* 10 (1995): pp. 23–28.

Individual data elements and outcome scales derived from the RAI-MDS 2.0© were reviewed. Those relevant to the domains in the framework were selected for further analysis and are listed in Table 2.

Framework Domain	RAI-MDS 2.0© Information Available
Anatomical and biochemical influences	Cognitive Performance Scale (CPS) score ⁶ Indicators of delirium Depression Rating Scale (DRS) score ⁷ Changes in Health, End-Stage Disease, Signs and Symptoms (CHESS) ⁸ Insomnia or change in sleep pattern Dementia (including Alzheimer's disease) Psychiatric or mood disease Neurological disease Urinary tract infection Other infections
Past behaviour	Mental health history
Social network	Index of Social Engagement (ISE) score ⁹ Open expression of conflict or anger with family or friends Withdrawal from activities of interest Reduced social interaction Marital status Daily contact with relatives or close friends
Environmental triggers	Activities of Daily Living (ADL) Self-Performance Hierarchy Scale Score ¹⁰ Continence

 Table 2
 Behaviour Framework and RAI-MDS 2.0© Elements Selected for Analysis

As many of the characteristics in the framework are associated with each other, logistic regression was used to identify which were independently associated with aggressive behaviours once all other characteristics were taken into account. The dependent variable was whether or not the resident exhibited any of the four aggressive behaviours at any time in the seven days prior to the assessment. Prior to fitting the models, preliminary analysis was conducted and any factors that did not on their own show a statistically significant association with residents' behaviour were excluded. In addition to the framework factors, age and sex were added to the model to control for the residents' demographic characteristics.

The factors found to be statistically significantⁱⁱ in the model are illustrated in Figure 4 and discussed below. Appendix A includes a complete list of the results for all factors from the logistic regression.

The most significant factor was delirium: the odds of residents exhibiting aggressive behaviours were almost four times (3.9) higher for those who were assessed as having indicators of delirium than for those with no reported delirium indicators.

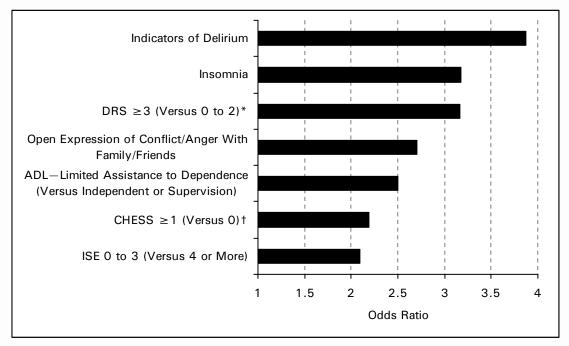
ii. Factors whose p-value was less than 0.05.

The odds of exhibiting aggressive behaviours were three times higher for residents with either signs of depression or insomnia.

Residents who openly expressed conflict with family or friends were more likely to be assessed as exhibiting aggression than those who did not openly express conflict (odds ratio of 2.7). Residents who were more dependent in activities of daily living were more likely to exhibit aggressive behaviours than residents who were independent or required only supervision (odds ratio of 2.5).

The odds of exhibiting aggressive behaviours were two times higher for residents assessed with health instability than for residents assessed with no health instability. Finally, residents with lower social engagement were more likely to manifest aggressive behaviours than residents with a higher degree of social engagement (odds ratio of 2.1).

Figure 4 Odds Ratios of Factors Associated With Aggressive Behaviour, Nova Scotia Nursing Homes, 2003–2004 to 2006–2007 (N = 699)



Notes

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* Residents with a DRS score \geq 3 show signs of depression.⁷

[†] Residents with a CHESS score \geq 1 show signs of increasing health instability.⁸

Source

Continuing Care Reporting System, 2003–2004 to 2006–2007, Canadian Institute for Health Information.

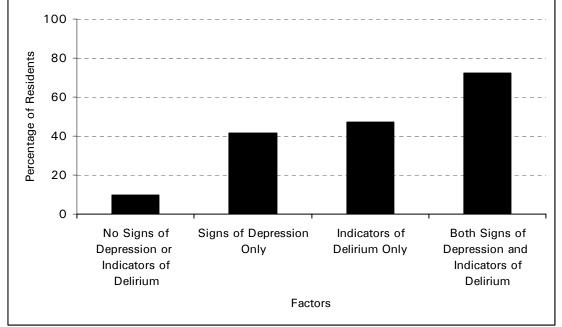
The model results show the effect of each individual characteristic on the odds of a resident exhibiting aggressive behaviour. In many cases, residents actually have more than one of these characteristics, which can significantly increase the odds of them exhibiting aggressive behaviour.



Signs of depression and indicators of delirium are two of the three most significant factors contributing to the risk of aggressive behaviour. Figure 5 illustrates the impact on prevalence of aggressive behaviour when these risk factors are combined. For those residents assessed with both depression and delirium, the prevalence of aggressive behaviour was over seven times higher (72%) than those with no signs of these conditions.

It is interesting to note that the residents' age and sex were not significantly associated with aggressive behaviour.





Source



Wandering

In the RAI-MDS 2.0[©], wandering is defined as locomotion with no discernible, rational purpose. Overall, 13% of the nursing home residents wandered. However, a significant proportion of residents were unable to move around the facility. When these residents were excluded, the prevalence of wandering among nursing home residents who had some ability to move around the facility increased to one in five (20%).

Resident Characteristics Associated With Wandering

A logistic regression model, similar to the one used for aggressive behaviour, was developed to identify characteristics independently associated with residents who wandered. Only those who had some ability to move around the facility were included.

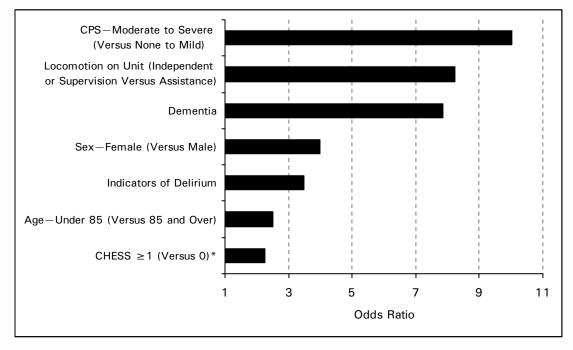


Figure 6 Odds Ratios of Factors Associated With Wandering, Nova Scotia Nursing Homes, 2003–2004 to 2006–2007 (N = 439)

Notes

Among residents who had some ability to move around the facility.

* Residents with a CHESS score ≥ 1 show signs of increasing health instability.⁸

Source



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A resident's score on the Cognitive Performance Scale (CPS) was the most significant factor for wandering. Residents with moderate to severe cognitive impairment were considerably more likely to wander (odds ratio of 10) compared to residents assessed with mild or no impairment.

Having a diagnosis of dementia—either Alzheimer's or other dementia—recorded on the RAI-MDS 2.0© was also independently associated with wandering. The odds of wandering were almost eight times higher among residents who had a diagnosis of dementia compared with residents without this diagnosis.

Residents who were either independent or required only supervision to move around within the nursing unit were more likely to wander than those assessed as requiring assistance for locomotion (odds ratio of 8.2). This finding is potentially explained by the fact that residents requiring assistance are more likely to be less mobile overall, which limits the possibility of wandering.

Two other factors from the anatomical and biochemical influences domain—indicators of delirium and health instability—were statistically significant for wandering (odds ratio of 3.5 and 2.3, respectively).

Unlike the previous model characterizing aggressive behaviours, the residents' demographic characteristics had an independent association with their propensity to wander. Females were more likely to wander than males (odds ratio of 4.0) and the odds of wandering for residents younger than 85 years were 2.5 times higher than for residents 85 years of age and older.

None of the factors from the social network domain showed a significant association with wandering.

Discussion

The analyses illustrate a number of key factors associated with behavioural symptoms in nursing home residents. Many of these residents face complex health issues. Some, such as delirium, depression and insomnia, are amenable to adjustment in clinical interventions, which in turn may improve the behavioural symptoms. Awareness of the impacts of decline in health and functional independence may also contribute to improvements in approaches to care.

The results of the analyses showed that aggressive behaviour and wandering were associated with different factors. Insomnia, signs of depression and indicators of delirium were the three most significant factors associated with aggressive behaviour. In contrast, the most significant factors for wandering were cognitive function, the ability to move around on the nursing unit and a diagnosis of dementia.



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The RAI-MDS 2.0© assessment is used on admission to inform individualized care plans for residents. As these assessments are carried out periodically throughout a resident's stay, they are also used to track changes in a resident's status, evaluate progress toward their goals and adjust the care plan accordingly.

An integral part of developing or modifying a care plan is to identify the key areas on which to focus care; to determine the scope, severity and impact of a resident's problems; and to understand the causes of and relationships between a resident's problems. The RAI-MDS 2.0© provides caregivers with Resident Assessment Protocols (RAPs), derived from the clinical assessment, which identify potential problems and provide a framework for further evaluation and care planning.

The Behavioural Symptoms RAP is triggered for a resident who exhibits any of the five behaviours on his or her assessment. The RAP provides guidelines for clinicians to evaluate in more detail the severity of the behaviours, potential causative factors, and the impact of current treatment procedures.

In addition, aggregate data from the RAI-MDS 2.0© assessment are also used to inform organizational, regional or provincial/territorial initiatives. Understanding the characteristics of nursing home populations across Canada is key to planning for future resources.

Benchmarking of key quality indicators and monitoring of outcomes are facilitated through CIHI comparative reports. Organizations at all levels can use these reports to support their quality improvement programs by tracking performance over time and between organizations.

Conclusion

The findings illustrate the value of the RAI-MDS 2.0© assessment, used in Nova Scotia and in other jurisdictions across the country for identifying residents exhibiting or at risk for exhibiting behavioural symptoms. It provides real-time information to the care providers for individualized care planning, which in turn supports enhanced quality of life for the resident and a safer environment for all.

This analysis contributes to awareness of the factors associated with behavioural symptoms that may respond to clinical interventions and prevention strategies. The information may also be used to support organizational and system planning for an aging population.

As CCRS implementation in the residential care sector continues across Canada, the reporting system will support further analysis of the impact of clinical interventions on behavioural symptoms as well as other important research on outcomes.

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Appendix A

Tables 3 and 4 show a complete list of the results for all factors included in the logistic regression models for aggressive behaviour and wandering. Odds ratios with their 95% confidence intervals and p-values are presented.

Table 3Results of Logistic Regression Model for Aggressive Behaviour,
Nova Scotia Nursing Homes, 2003–2004 to 2006–2007

RAI-MDS 2.0 [©] Characteristic	Odds	95% Confidence Intervals	p-Value	Ν	
Demographics					
Age Group					
85 and Over	1.0	_	_	416	
Under 85	0.8	0.52-1.13	0.1768	283	
Sex					
Male	1.0	_	-	146	
Female	0.8	0.52-1.32	0.4273	553	
Anatomical and Biochemical Influe	ences				
Cognitive Performance Scale Scor	е				
None to Moderate	1.0	_	-	454	
Severe	1.5	0.94-2.23	0.0902	245	
Indicators of Delirium					
No	1.0	-	-	231	
Yes	3.9	2.33-6.43	<.0001	468	
Depression Rating Scale					
No Signs of Depression (DRS $<$ 3)	1.0	_	_	556	
Signs of Depression (DRS \geq 3)	3.2	1.98-5.07	<.0001	143	
CHESS (Health Instability)					
No Instability	1.0	_	-	250	
Instability	2.2	1.48-3.26	0.0001	449	
Insomnia					
No	1.0	-	-	642	
Yes	3.2	1.57-6.41	0.0013	57	
Dementia					
No	1.0	-	-	309	
Yes	1.5	0.98-2.21	0.0654	390	
Neurological Condition					
No	1.0	-	-	457	
Yes	0.8	0.56-1.23	0.3546	242	
Urinary Tract Infection					
No	1.0	-	-	634	
Yes	1.8	0.97-3.37	0.0640	65	



Table 3Results of Logistic Regression Model for Aggressive Behaviour, Nova
Scotia Nursing Homes, 2003–2004 to 2006–2007 (continued)

RAI-MDS 2.0 [©] Characteristic	Odds	95% Confidence Intervals	p-Value	N	
Social Network					
Index of Social Engagement					
High Engagement	1.0	_	-	260	
Low Engagement	2.1	1.34-3.27	0.0012	439	
Open Expression of Conflict/Anger \	Nith Family	/Friends			
No	1.0	—	-	661	
Yes	2.7	1.14-6.43	0.0243	38	
Withdrawal From Activities of Intere	est				
No	1.0	_	-	611	
Yes	1.9	0.97-3.81	0.0615	88	
Reduced Social Interaction					
No	1.0	_	-	530	
Yes	0.7	0.39-1.13	0.1262	169	
Environmental Triggers					
Activities of Daily Living Performance	e				
Independent or Supervision	1.0	—	-	83	
Limited Assistance to Dependence	2.5	1.05-5.98	0.0388	616	
Incontinence (Bladder and/or Bowel)					
No	1.0	_	-	205	
Yes	1.3	0.77-2.08	0.3556	494	

Notes

The dependent variable modelled was whether or not the resident exhibited any of the four aggressive behaviours at any time in the seven days prior to the assessment.

The regression model explained 39% of the variability in the occurrence of aggressive behaviour.

Source



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Table 4Results of Logistic Regression Model for Wandering, Nova Scotia Nursing
Homes, 2003–2004 to 2006–2007

RAI-MDS 2.0 [©] Characteristic	Odds Ratio	95% Confidence	p-Value	Ν		
Demographics						
Age Group						
85 and Over	1.0	_	_	259		
Under 85	2.5	1.29-4.93	0.0070	180		
Sex						
Male	1.0	_	_	91		
Female	4.0	1.57-10.18	0.0037	348		
Anatomical and Biochemical Influen	ces					
Cognitive Performance Scale Score						
None to Mild	1.0	-	-	209		
Moderate to Severe	10.0	3.15-31.95	<.0001	230		
Indicators of Delirium						
No	1.0	_		176		
Yes	3.5	1.23-9.85	0.0186	263		
Depression Rating Scale						
No Signs of Depression (DRS < 3)	1.0	_	-	345		
Signs of Depression (DRS \geq 3)	1.4	0.62-2.99	0.4397	94		
CHESS (Health Instability)						
No Instability	1.0	-	-	174		
Instability	2.3	1.15-4.44	0.0179	265		
Insomnia				-		
No	1.0	-	-	398		
Yes	2.1	0.77-5.65	0.1465	41		
Dementia						
No	1.0	_	-	213		
Yes	7.9	3.02-20.53	<.0001	226		
Psychiatric/Mood Condition						
No	1.0		_	320		
Yes	0.5	0.21-1.05	0.0662	119		
Urinary Tract Infection						
No	1.0	_	-	397		
Yes	2.7	1.007.50	0.0505	42		



Table 4Results of Logistic Regression Model for Wandering, Nova Scotia Nursing
Homes, 2003–2004 to 2006–2007 (continued)

RAI-MDS 2.0 [©] Characteristic	Odds Ratio	95% Confidence Intervals	p-Value	Ν
Social Network				
Index of Social Engagement				
High Engagement	1.0	I	-	227
Low Engagement	1.4	0.70-2.79	0.3463	212
Withdrawal From Activities of Int	erest			
No	1.0	-	-	394
Yes	2.3	0.67-7.58	0.1888	45
Reduced Social Interaction				
No	1.0	-	-	352
Yes	1.1	0.38-3.02	0.9003	87
Environmental Triggers				
Locomotion on Unit				
Limited to Extensive Assistance	1.0	_	-	88
Independent or Supervision	8.2	3.22-21.02	<.0001	351
Incontinence (Bladder and/or Bowel)				
No	1.0	_	-	187
Yes	1.4	0.68-2.76	0.3851	252

Notes

Among residents who had some ability to move around the facility.

The dependent variable modelled was whether or not the resident exhibited wandering at any time in the seven days prior to the assessment.

The regression model explained 55% of the variability in the occurrence of residents' wandering.

Source

Technical Notes

Data Source

The analysis was based on data from five Nova Scotia nursing homes that submit data to the Continuing Care Reporting System (CCRS). The 699 residents included in the analysis received services at any period between April 1, 2003, and March 31, 2007, and were assessed using the RAI-MDS 2.0©, an internationally validated clinical assessment instrument used in continuing care facilities (such as long-term care, nursing homes and hospital-based continuing care).

The RAI-MDS 2.0[©] is the foundation data standard for the CCRS. It captures information across many domains, including cognitive and physical functioning, behaviour, medication use, nutritional status, diagnoses and special treatments and procedures. The CCRS standard requires that a RAI-MDS 2.0[©] assessment be completed on all residents who stay in a facility for 14 days or longer. Residents are then assessed on a quarterly basis for the duration of their stay. The analysis was based on each resident's most recent assessment for the period of the study.

The nursing homes in Nova Scotia included in the analysis implemented the RAI-MDS 2.0© in 2003 and have been submitting to CCRS since then. They are based in five different communities across the province, some in urban areas, others in rural areas. They also vary in size and ownership (such as not-for-profit or for-profit ownership).

Inclusion Criteria for Analysis

For the purpose of this analysis, each resident was counted once using the resident's most recent assessment available in the time period. Some of the characteristics of interest were evaluated only on the full RAI-MDS 2.0© assessment (for example, chronic conditions such as Alzheimer's disease). Where the most recent assessment was a quarterly assessment, these characteristics were imputed from the latest full assessment available. Residents with no full assessment available were excluded from the analysis, as information on key characteristics was not available. Table 5 illustrates which residents were included in the analysis.



Table 5Inclusion Criteria for Analysis

Residents in Five Nova Scotia Nursing Homes, 2003–2004 to 2006–2007	Number	Percentage
Residents who received care (based on unique health card number)	755	100.0
Residents excluded	56	7.4
Missing value for sex	1	0.1
Without a full assessment	55	7.3
Residents included in analysis	699	92.6

Source

Continuing Care Reporting System, 2003–2004 to 2006–2007, Canadian Institute for Health Information.

Comparison With Statistics Canada's Residential Care Facility Survey

Table 6 shows a comparison of the demographic profile of the residents from the five nursing homes included in the analysis and data from the Statistics Canada's 2004–2005 Residential Care Facility (RCF) Survey. Analysis of the Homes for the Aged subpopulation suggested that the demographic profile of the residents used in the analysis was slightly different than that of the overall population in Nova Scotia nursing homes: 79% of the residents in the analysis were female and 60% were aged 85 and over, compared with 73% and 48%, respectively, in Nova Scotia nursing homes overall. The RCF Survey also indicated that residents in Nova Scotia nursing homes were more likely to be female aged 85 and over than in Canada as a whole.¹¹



Table 6Demographic Profile of Residents in CCRS Sample of Nova Scotia Nursing
Homes, and All Homes for the Aged* in Nova Scotia and Canada

	Nova Scotia Nursing Homes Participating in CCRS	Nova Scotia	Canada
Number of facilities	5	111	1,952
Number of residents	699 ⁺	6,550‡	189,325 [‡]
Proportion of females	79.1%	72.9%	70.3% [§]
Proportion aged 85 and over	59.5%	48.3%	48.9% [§]

Notes

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* Statistics Canada classifies facilities based on the principal characteristic of the predominant group of residents of facility.

† Residents who received services at any period between April 1, 2003, and March 31, 2007.

- ‡ Residents on the books at the end of the reporting year.
- § Excludes Quebec.

Sources

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