

A comparison of small and large assisted living facilities for the diagnosis and care of dementia: the Maryland Assisted Living Study

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SUMMARY

Objectives To compare the demographic, clinical, and psychiatric characteristics of residents living in small (≤ 15 beds) and large assisted living (AL) facilities in the United States.

Methods One hundred and ninety-eight residents in 10 large and 12 small assisted living facilities were comprehensively assessed as part of the Maryland Assisted Living Study (MD-AL). The presence or absence of dementia and psychiatric disturbances and the facilities' recognition and management of these disorders were compared across the two types of AL. Aspects of care delivery were also compared.

Results Small facilities had a higher prevalence of dementia (81%) compared to larger facilities (63%) and the mean Mini-Mental State Examination (MMSE) across all residents in small facilities (mean 13.04) was than in large facilities (mean 19.93) ($p = 0.000$). Almost all (98%) of the residents of small homes carried a diagnosis of a dementia or other psychiatric diagnosis, compared to 74% of residents in large facilities ($p < 0.001$). Psychosis in particular was more prevalent in the smaller homes and the mean Neuropsychiatric Inventory score, a measure of neuropsychiatric symptoms, was higher compared to large homes. Falls were more common in larger homes despite a greater number of personal care hours per week. The use of safety devices and restraints was significantly less common in large facilities compared to smaller homes, where 'geri-chair' and bedrails were more often used.

Conclusions Rates of dementia and psychiatric disorder differ in assisted living facilities depending on size of facility. Copyright © 2006 John Wiley & Sons, Ltd.

KEY WORDS — dementia; dementia care; assisted living

BACKGROUND

Recent research employing direct assessment methods has found high rates of dementia and behavioural disturbances in assisted living (AL) facilities (Rosenblatt *et al.*, 2004). There is evidence to suggest that facility characteristics, such as the size of the facility,

may affect delivery of care to AL residents, particularly those with dementia. Previous studies, using a direct cognitive assessment methodology, have not examined in detail the differences between small as compared to large facilities with regard to recognition and treatment of dementia and other psychiatric illnesses. Size and type of facility in dementia care in nursing home settings has been shown to be of importance in such factors as treatment of depression (Payne *et al.*, 2002), inappropriate medication prescribing (Sloane *et al.*, 2002), resident activity levels (Chou *et al.*, 2003) and overall quality of care (Lemke and Moos, 1986).

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A key difference between small and large AL facilities is that they evolved in very different ways. Traditionally, large facilities developed from the hospitality industry and catered mostly to more affluent individuals, were privately financed and were more selective in their admission policies. In contrast, the smaller facilities generally arose from group homes for people with enduring mental illness, were often state supported, had less stringent admissions criteria and had a preponderance of residents from lower socio-economic groupings (Zimmerman *et al.*, 2001). Hence, since these facility types had distinct origins, it is to be expected that differences in the delivery of care as well as resident population exist. These differences have not yet been systematically examined in AL settings, particularly in relation to dementia care.

The purpose of this study is to compare various aspects of assisted living facilities of different sizes in Maryland. In particular, frequency of dementia and dementia-related behavioural disturbance, as well as rate of detection and treatment of dementia, is compared in the two facility types. This study builds on previously reported findings from the Maryland Assisted Living Study (MD-AL) (Rosenblatt *et al.*, 2004). Key findings from the latter study were that DSM-IV dementia was common and could be diagnosed in 67.7% of 32 randomly selected assisted living facilities in Central Maryland, which is among the highest reported in such facilities. Of these, 78–80% of dementia was recognized by family or caregivers, 73% was adequately evaluated but only 52% was adequately treated. High rates of neuropsychiatric symptoms in those with dementia (83%) as well as those without dementia (26.3%) were found.

METHODS

Design

MD-AL is an ongoing study of a stratified random sample of assisted living (AL) residents with the principal aim to obtain a direct estimate of the prevalence of dementia and other psychiatric disorders in these facilities in Central Maryland. The major findings from the first phase of the study have already been reported (Rosenblatt *et al.*, 2004). The State of Maryland supplies a list of registered assisted living facilities totalling 1282 from which facilities in the Central Maryland region (population approximately 620 000) were identified. From this group, a stratified sample of small and large facilities was randomly

selected and included in the study if the facility agreed to participate (67% in total; 71% of the large and 63% of small facilities). The sampling stratification method was based on facility size (with a median of 15 beds) because it was hypothesized that there may be important differences between large and small facilities regarding detection and care of residents with dementia as well as overall delivery of care. This is consistent with the definitions of small and large AL facilities used by the Collaborative Studies of Long-term Care (CS-LTC) (Zimmerman *et al.*, 2001). The sampling process involved selecting approximately three small facilities to every large facility so as to recruit enough participants from small facilities to balance the sample and provide meaningful comparisons. In each chosen facility, fifteen residents were examined, which constituted all the residents in the small or a random sample in the large facilities. Further details of the sampling methods are reported in Rosenblatt *et al.* (2004).

Procedures

A detailed discussion of the study procedure has already been reported in Rosenblatt *et al.*, 2004). Briefly, examination of participants was undertaken by a study team consisting of a geriatric psychiatrist, a dementia nurse, and a psychometrician. If any of the residents who were initially approached declined to participate, another randomly selected resident would be approached and invited to participate. Seventy-four percent of those approached agreed to participate. For those participants not able to give their own informed consent, a responsible family member or power of attorney was asked to do so. Individual assent for these latter participants was also required. Capacity to provide informed consent was rigorously screened by the study team with collateral information obtained from caregivers. The study and consent procedures were approved by the appropriate institutional review board at the Johns Hopkins School of Medicine. Details of the consent process have been outlined elsewhere (Rosenblatt *et al.*, 2004).

The study team undertook the study battery (cognitive and psychiatric questionnaires) as well as a history and clinical examination of the participants. Information was sought from administrators and caregivers in the facility as well as family informants or legal representatives, as well as the residents' AL notes. Information obtained included demographic and work information about facility caregivers, and details about the facility's resources, care and safety procedures, nutrition, accident record and activities

for residents. Historical information about recent symptoms and management as well as an opinion as to whether the participant had dementia or not was also sought from informants.

Diagnoses of dementia and psychiatric disturbances were determined by direct examination as well as results of a cognitive and psychiatric assessment battery, which for the purposes of these analyses included: Neuropsychiatric Inventory (NPI; Cummings *et al.*, 1994), a measure of neuropsychiatric symptoms, Mini-Mental State Exam (MMSE; Folstein *et al.*, 1975), a measure of cognitive functioning, Caregiver Activity Survey (CAS), a measure of time devoted to daily resident care by facility staff, and psychometric tests (Rosenblatt *et al.*, 2004). A full neurological exam and mental state exam, which included the Structured Clinical Interview for DSM-IV (provided the MMSE score was greater than 23), was conducted by the study team psychiatrist.

The data collection phase was followed by diagnostic and treatment adjudication in the form of a conference involving the members of the study team and main investigators. The adjudication panel, consisting of the team who saw each participant, three other geriatric psychiatrists, two geriatric medicine physicians, and a neuropsychologist, was blind to the diagnosis made by the assessing psychiatrist and came to a consensus decision regarding diagnosis and treatment. Criteria for dementia and psychiatric disturbances were based on the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV; APA, 2000).

Descriptive univariate statistics were used to compare the various characteristics of the two facility types. Due to the relatively small sample size this was an exploratory study and multivariate statistics were not used to determine correlations between variables.

RESULTS

Ten large and 12 small AL facilities were identified using a stratified, random methodology from among the 1282 licensed or pending license AL facilities in central Maryland.

Characteristics of the facilities

Details of the characteristics of large as compared to small facilities are outlined in Table 1. Of the 10 large facilities, four were located in suburban areas and a further six in urban areas. They had occupancies of 30–120 residents (median 50.5), whereas the 12 small facilities had occupancies of 2 to 10 residents (median 5.5). The small facilities were located in rural (2), suburban (6) and urban (4) areas. Larger facilities had more single occupancy rooms. More small facilities were for profit (93.33%) with lower average monthly cost compared to the 50% of larger facilities which were for profit ($\chi^2 = 4.774$, $df = 1$, $p = 0.029$) and had higher average monthly costs (Table 1).

Demographic characteristics of the residents

Select demographic characteristics of the 150 participants living in large and the 48 residents living in

Table 1. Characteristics of the facilities

	Small (≤ 15 units) ($n = 12$)	Large (> 15 units) ($n = 10$)	Statistics
Number of units	Range: 3–15 Median: 7	Range: 31–140 Median: 66	$t = 6.417$, $df = 20$, $p < 0.001$
Number of residents	Range: 2–10 Median: 5.5	Range: 30–120 Median: 50.5	$t = 6.526$, $df = 20$, $p < 0.001$
Location:			
Urban	4 (16.7%)	6 (60%)	$\chi^2 = 2.640$ $df = 2$ $p = 0.267$
Suburban	6 (50%)	4 (40%)	
Rural	2 (33.3%)	0 (0%)	
Average monthly cost (\$), mean	2690.04	3082.35	$t = 1.740$, $df = 188$, $p = 0.08$
Locked facility	3 (25%)	3 (33%)	$\chi^2 = 0.069$, $df = 1$, $p = 0.793$
#Occupants/bedroom			
Single occupancy	31 (64.4%)	144 (96%)	$\chi^2 = 34.958$, $df = 1$, $p < 0.001$
Double occupancy	17 (35.4%)	6 (4%)	

Table 2. Demographic and other characteristics of the residents

	Small (n = 48)	Large (n = 150)	Statistics
Age	Mean (SD) 82.207 (9.37) Median 83.00 Minimum: 58.00 Maximum: 97.56	Mean (SD) 86.81 (7.55) Median 87.54 Minimum 60.10 Maximum 104.02	$t = 3.457$, $df = 196$, $p = 0.001$
Surviving children	Mean (SD) 1.66	Mean (SD) 1.45	$t = -0.784$, $df = 190$, $p = 0.434$
DNR order in place			
Yes	13 (27.1%)	50 (33.6%)	$\chi^2 = 0.699$, $df = 1$, $p = 0.403$
No	35 (72.9%)	99 (66.4%)	
n(%)			
Marital Status n(%)			
Cohabiting	2 (4.2)	4 (2.7)	$\chi^2 = 8.55$, $df = 4$, $p = 0.073$
Married & apart	3 (6.3)	4 (2.7)	
Divorced	7 (14.6)	11 (7.3)	
Widowed	26 (54.2)	114 (76)	
Never married	10 (20.8)	17 (11.3)	
Religion n(%)			
Catholic	6 (12.5)	30 (20.0)	$\chi^2 = 13.45$, $df = 4$, $p = 0.073$
Jewish	11 (22.9)	61 (40.7)	
Protestant	27 (56.3)	49 (32.7)	
Other	3 (6.3)	8 (5.3)	
Race n(%)			
White	34 (70.8)	130 (86.7)	$\chi^2 = 8.37$, $df = 3$, $p = 0.039$
Black	14 (29.2)	18 (12)	
Other races	0	2 (1.4)	
Reason for admission n(%)			
Caregiver	5 (10.4)	3 (2.0)	$\chi^2 = 20.9$, $df = 4$, $p = 0.000$
Medical	2 (4.2)	46 (30.7)	
Behavioural	6 (12.5)	7 (4.7)	
Financial	2 (4.2)	5 (3.3)	
Functional	33 (68.8)	89 (59.3)	

small facilities are compared in Table 2. In small facilities, residents were younger with 60.4% age 80 or older, whereas 86.9% ($\chi^2 = 15.84$; $df = 1$; $p < 0.001$) in large facilities were in this age group. Gender ratios were comparable with 79.3% and 77.1% being female in small or large facilities respectively. Large facilities had a significantly greater proportion of Catholic, Jewish and white residents, whereas smaller facilities had more Protestant and black residents. The most common reason for moving into care for both types of facilities was due to a decline in functional status (68.8% in small and 59.3% in large facilities). Other reasons for admission included behavioural and financial problems, or loss of a caregiver. A significantly greater proportion of residents were admitted to large facilities for medical problems (30.7%) compared to small facilities (4.2%). There were no differences between the two facility types in mean number of surviving children, or the presence of a 'do not resuscitate order (DNR)' on the chart.

Prevalence of dementia and non-cognitive psychiatric disorders (Table 3)

Over two-thirds 67.7% (134/198) of residents in both types of facilities, based on consensus conference decision, had a diagnosis of dementia. Smaller facilities had a significantly greater percentages of residents with dementia, (81% in small vs 63% in large; chi-square (χ^2) = 5.336, $df = 1$, $p = 0.021$), however, there were slightly more cases of Alzheimer disease (AD) diagnosed in the large facilities (Table 3). The mean MMSE for all residents examined in small facilities (13.04 SD 9.79) was significantly lower compared to large facilities (19.93 SD = 7.74) ($p = 0.000$). This difference appeared to be driven by the larger proportion of residents in the small facilities with a diagnosis of dementia, and by a lower mean MMSE (10.31 SD = 7.80) in small facility residents with dementia compared to those with dementia in large facilities (16.44 SD = 6.89) ($p = 0.000$). No differences in resident medical

Table 3. Prevalence of cognitive and psychiatric disorder

	Small (n = 48)	Large (n = 150)	Statistics
Dementia subtypes by consensus diagnosis n(%)			
Alzheimer	25 (64.1%)	53 (55.8%)	$\chi^2 = 3.561$, df = 3, $p = 0.313$
Vascular	4 (10.3%)	13 (13.7%)	
Lewy Body	1 (2.6%)	0 (0%)	
Dementia NOS	9 (23.1%)	29 (30.5%)	
Mean (SD) MMSE score			(t; df; p)
Overall	13.04 (9.76)	19.93 (7.74)	4.453; 67; 0.000
Dementia	10.31 (7.80)	16.44 (6.89)	4.490; 131; 0.000
No dementia	24.89 (8.74)	26 (4.87)	0.558; 61; 0.579
Any behavioural disturbance past month (NPI)			
No	8 (17%)	40 (26.7%)	$\chi^2 = 1.807$, df = 1, $p = 0.179$
Yes	39 (83%)	110 (73.3%)	
Clinically significant symptoms (NPI ≥ 4)			
No	12 (25.5%)	61 (40.7%)	$\chi^2 = 3.514$, df = 1, $p = 0.61$
Yes	35 (74.5%)	89 (59.3%)	
Mean NPI total score	17.02 (18.79)	9.78 (12.02)	$t = -2.487$, df = 58.25, $p = 0.016$
Mean NPI total carer distress score	5.64 (7.17)	3.87 (5.08)	$t = -1.57$, df = 61.07, $p = 0.123$
Current psychiatric diagnosis			
Mood disorder	7 (14.6%)	31 (20.7%)	$\chi^2 = 0.868$, df = 1, $p = 0.352$
Anxiety disorder	1 (2%)	6 (4%)	
Psychotic disorder	5 (10.4%)	2 (1.3%)	$\chi^2 = 8.797$, df = 1, $p = 0.003$
Either dementia or psychiatric diagnosis	47 (98%)	111 (74%)	$\chi^2 = 12.903$, df = 1, $p < 0.001$
Both dementia & psychiatric Dx	4 (8.3%)	23 (15.3%)	

comorbidity and physical state were observed, based on the General Medical Health Rating Scores which had a mean of 2.83 (SD = 0.76) in small facilities and 2.73 (SD = 0.79) in large facilities ($t = -0.74$; df = 195, $p = 0.46$). Educational attainment for residents in the two facility types was similar.

Eighty-three percent of residents with dementia examined in both facilities exhibited neuropsychiatric symptoms associated with their dementia in the previous month based on their Neuropsychiatric Inventory score (NPI), and 70% had clinically significant symptoms as determined by an NPI score ≥ 4 in any one domain. The mean total NPI score in small facilities was twice that (17.02 SD = 18.79) of large facilities (9.78 SD = 12.02) ($p = 0.016$), however, there was no difference between the two facility types in rates of those with clinically significant behavioural disturbances (NPI score ≥ 4 in any one NPI domain). In spite of the difference in rate of overall behavioural disturbance between the two facility types, there was no difference in mean carer distress scores between them.

The most striking difference between the facility types was that 98% of the residents in small homes had a diagnosis of either dementia or another psychiatric disorder compared to 74% of residents in large facilities ($p < 0.001$) (Table 3). In small homes,

psychosis as a psychiatric diagnosis was much more common compared to large homes (10.4% in small and 1.3% in large; $p = 0.003$).

Recognition and treatment of dementia and psychiatric disorders

Rates of recognition of dementia by caregivers was slightly higher in the small facilities ($\chi^2 = 2.994$, df = 1, $p = 0.084$). Small facilities also had marginally better rates of treatment of dementia ($\chi^2 = 4.689$, df = 2, $p = 0.096$), however, evaluation (work-up) rates were comparable. Evaluation and treatment rates were based on complete review of the case and were determined in part by the participant's physician. Hence, these rates were higher than recognition rates, which were based on family or primary care-giver informants.

The care of residents and activity levels (Table 4)

A notable finding regarding level of care was that the mean number of hours of personal care-giving provided was *far greater* (43.5 h per month, SD = 132.6) in large as compared to small facilities (14.2 h per month, SD = 49.4). Although the number of emergency room visits and accidents per month did

Table 4. Level of care and activities for residents

	Small (n = 48)	Large (n = 150)	Statistics
Private duty caregiver (mean h a month)	14.22 (SD 49.43)	43.51 (SD 132.60)	$t = 1.959$, $df = 134.46$, $p = 0.052$
Hospital days (in last month)	0.65 (SD 2.47)	0.52 (SD 2.68)	$t = -0.228$, $df = 196$, $p = 0.773$
Emergency room visits	0.06 (SD 0.245)	0.09 (SD 0.326)	$t = 0.472$, $df = 196$, $p = 0.637$
Nursing home days	0.0	0.19 (SD 2.286)	$t = 0.565$, $df = 196$, $p = 0.573$
#Falls	0.13 (SD 0.334)	0.33 (SD 0.620)	$t = 2.979$, $df = 150.17$, $p = 0.003$
#Accidents	0.02 (SD 0.144)	0.06 (SD 0.312)	$t = 0.842$, $df = 196$, $p = 0.401$
Use of restraints (%):			
Belts	0.0%	0.7%	$\chi^2 = 322$, $df = 1$, $p = 0.571$
Wrist restraint	0%	0%	
Posey	0%	0%	
Gerichair	2.1%	0%	$\chi^2 = 3.141$, $df = 1$, $p = 0.076$
Safety devices (%):	16.7%	6.0%	$\chi^2 = 5.271$, $df = 1$, $p = 0.022$
Rails			
Visits (%):			
Relatives	68.8%	89.3%	$\chi^2 = 11.519$, $df = 1$, $p = 0.001$
Friends	31.3%	47%	$\chi^2 = 3.662$, $df = 1$, $p = 0.056$
Clergy	20.8%	22.8%	$\chi^2 = 0.083$, $df = 1$, $p = 0.774$
Types of diets (%):			
Regular	100%	87.9%	$\chi^2 = 6.382$, $df = 3$, $p = 0.094$
Diabetic	0%	9.4%	
Soft	0%	2.0%	
Puree	0%	0.7%	
Assistance with medication administration	93.8%	85.3%	$\chi^2 = 2.335$, $df = 1$, $p = 0.126$
Other services received (%):			
Occupational therapy	0.0%	5.3%	$\chi^2 = 2.668$, $df = 1$, $p = 0.102$
Physical therapy	2.1%	13.3%	$\chi^2 = 4.854$, $df = 1$, $p = 0.028$
3. Structured activities	39.6%	92.7%	$\chi^2 = 63.562$, $df = 1$, $p < 0.001$
Skilled nursing care	0.0%	4.7%	$\chi^2 = 2.322$, $df = 1$, $p = 0.128$
Recreation:			
Television	74.29 (SD 77.71)	57.86 (SD 66.04)	$t = -1.317$, $df = 70.67$, $p = 0.192$
Group activities	48.60 (SD 66.01)	29.64 (SD 32.33)	$t = -1.917$, $df = 54.49$, $p = 0.06$
3. Solo activities	24.90 (SD 39.15)	47.69 (SD 60.64)	$t = 3.021$, $df = 124.81$, $p = 0.003$

not differ between the two facility types, the mean number of falls per month was significantly lower in the smaller facilities ($p = 0.003$). The rate of restraint use in the form of a 'geri-chair' or bedrails was also greater in the small facilities. Regarding aspects of leisure, residents in larger facilities had a significantly greater frequency of visits from relatives and friends. They also engaged in more hours of solo activities per month whereas residents of small facilities participated in more hours of group activities. No differences in services offered was noted, other than physical therapy services, which were more commonly available on site in larger facilities. Diet and assistance with medications did not differ between the two facility types.

Characteristics of staff working in the respective facilities were compared and found to be no different in mean age, sex, and years of work experience. Larger facilities had a greater proportion of black employees

(81.7%) compared to smaller facilities (55%) ($\chi^2 = 9.961$, $df = 2$, $p = 0.007$) and the level of employee education was slightly lower in the former facilities (mean years 12.81 (SD = 2.08) in large vs 13.94 (SD = 2.36) in small ($t = -2.01$, $df = 83$, $p = 0.048$).

DISCUSSION

This cross-sectional study highlights certain critical differences in important resident and care characteristics and outcomes between small and large AL facilities. The most striking difference was that the smaller facilities had a much greater 'mental health load' in terms of rates of dementia and/or psychiatric diagnosis. Almost all residents (98%) of small facilities were affected by either dementia and/or another psychiatric disturbance. This is consistent with the finding that after functional decline, the most

common reason for admission to the small homes was for behavioural disturbance. In contrast, the larger homes had medical reasons as the second most common reason for admission after functional decline, which corresponds with their lower rates of psychiatric disturbances, particularly psychosis. The significantly higher mean NPI total scores in the smaller homes also support these findings. This pattern of differences in rates of psychiatric disturbance is consistent with the traditional 'board-and-care home' origins of many of the small facilities which tended to admit individuals with mental illness, as compared to the larger mostly non-profit facilities which tend to cater to more affluent individuals. Furthermore, it can be hypothesized that the smaller homes, being largely for-profit may have more flexible admission policies and accept more impaired individuals, in contrast the larger, non-profit homes which have been found to score higher than the for-profit facilities on issues such as policy choice, privacy provision and restricted admission policies (Zimmerman *et al.*, 2003).

Rates of most non-cognitive psychiatric disturbances, which were predominantly in the form of depression (14.6% in small and 20.7% in large), did not differ significantly across facility type and the rates found in this study are consistent with other studies of depression in care homes, which revealed rates of 13–40% (National Center for Assisted Living, 2001; Watson *et al.*, 2003). The lack of difference in depression and other non-cognitive psychiatric disorder rates across facility size is reassuring as factors which might be hypothesized to contribute to depression, such as isolation (living in a single room and undertaking more solo activities, more common in the large facilities), did not appear to have an influence on the rates. These findings are supported by Samus *et al.* (2005), who found no direct association between homelike environment and facility size on quality of life in AL residents, but found a moderating effect size of facility the effects of agitation on quality of life. Identification of depression in AL facilities is particularly important because depressed residents have been found to have higher rates of mortality and to be discharged to nursing homes at 1.5 times the rate of non-depressed residents (Watson *et al.*, 2003).

In contrast to the findings on depression and anxiety, psychosis was significantly more common in the smaller homes (10.4%) and reached rates consistent with other reports. The rate of psychosis in the larger facilities (1.3%) was surprisingly low. It is possible that certain environmental aspects of the larger facilities may be helpful in preventing the emergence of psychosis. For example, the increased

space, private duty care, increased number of single rooms and solo activities may be a positive, rather than a negative factor in this regard. One the other hand, the smaller homes might have admitted those with primary mental illness more readily as compared to larger homes with more restrictive admission policies.

The most common type of dementia in both facility types was Alzheimer disease, which is consistent with Rosenblatt and colleagues' (2004) finding of this being the most common dementia type in AL overall. The rate of dementia in the small facilities (81%) were far higher than reported in other studies, in which just over a half of residents were reported to have dementia (Zimmerman *et al.*, 2005), however, this cross-sectional rate reflects findings in both assisted living and nursing home facilities combined. Within the group of residents diagnosed by the study team as having dementia, the small homes still had cognitively more impaired dementia residents compared to the large homes, which might explain the higher rates of psychiatric disturbances overall as well as the significantly lower rates of visits by relatives and friends in small as compared to large homes. As dementia progresses and recognition of loved ones fades, visitors may deem that their efforts may be fruitless and cease visits. The psychiatrically more vulnerable individuals in small homes may have had a history of chronic mental illness which is often accompanied by less family contact and participation than the residents in larger facilities who have tended to be more affluent, have less chronic mental health history and are more connected to existing family members. Access for visitors to the respective facilities was no different as manifested by the equal rates of clergy visits across the two facility types.

Another important difference between facility types was the higher rate of falls in the larger facilities. This might be due to the increased use of restraints and safety devices, such as rails, which may be preventing falls in the smaller facilities. The finding is particularly interesting because dementia is a strong independent risk factor for falling and the rate of dementia was higher in the small facilities (Van Doorn *et al.*, 2003). Hence, it might be expected that falls would be more prevalent in the smaller facilities. The substantially greater number of hours of personal care-giving in larger facilities did not appear to prevent the falls but may reflect the greater need for 'hands-on' care for medically ill residents. Another factor may be that the larger facilities had older residents who might be more prone to falls. The increased use of safety devices in smaller homes is an important factor to

consider when seeking an appropriate placement for a person with a high fall risk.

With regards to facility description, it was interesting to note that smaller facilities had significantly fewer private rooms. Considering that the mission of AL is to help older adults maintain autonomy, privacy and quality of life in a personalized setting, it might be considered that shared bedroom arrangements are undesirable. Interestingly, however, while facility type appears to be related to quality of life of residents in AL, actual facility size does not appear to be a factor (Kane *et al.*, 2004; Samus *et al.*, 2005; Zimmerman *et al.*, 2005). There is also a growing and controversial literature regarding the optimal size of residential facilities for people with learning disabilities. Most studies have found that, contrary to common expectations, for this population as well, size does not impact quality of care in residential facilities.

The number of personalized care hours was greater in large homes as compared to small ones. This may reflect the greater medical needs of the residents of large facilities. It is possible that this difference in levels of care may impact on the discharge rates of the respective facility types since it has been shown that the main reason for leaving AL facilities is the requirement of more care (Phillips *et al.*, 2003). If this cannot be provided in smaller homes, it can be assumed that the turnover rate of residents might be higher and the mission of fostering 'aging in place' will be more difficult to fulfil.

The findings of this study serve to highlight some important differences in facility type. In particular, it appears that some aspects of larger facilities, such as availability of private rooms and personal care hours are more favourable compared to smaller facilities. This is consistent with previous findings that larger and non-profit facilities tend to score higher on 'quality indices', although quality of care is complex and multidimensional (Lemke and Moos, 1986). It must, however, be noted that there are some methodological limitations, namely that 29% of small and 37% of large facilities declined to participate in the study. No data regarding the characteristics of these facilities are available and it may well be that the rates of dementia, psychiatric illness and fall rates are different than seen in participating facilities. In addition, an important consideration is that during the random selection of facilities for inclusion in the study, it was found that 31.6% of small facilities approached had gone out of business compared to only 4.7% of larger facilities. Important factors of the closed small facilities may skew these results differently. Finally, due to the relatively small sample

size, multivariate statistics were not undertaken, hence there may be factors other than size driving the differences observed.

In conclusion, when considering the optimal setting for the care of the elderly, factors such as facility size need to be taken into consideration. As these findings clearly demonstrate, the level of care, types of activities and environment differ across facility type. It remains to be seen whether these differing factors have any long-term consequences, particularly on quality of life and mortality, on the residents of the respective facilities. Furthermore, considering the different rates of falls, dementia and psychiatric illness in the different facility types, it should be considered whether caregiver and environmental factors need to be altered accordingly. These issues are being addressed in the next phase of the MALS.

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