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# Anxiety, Depression, and Cognitive Impairment in Dementia-Specific and Traditional Assisted Living

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## Abstract

With the rapid growth of the assisted living (AL) industry, the number of AL residences providing dementia care continues to increase. The purpose of this article is to describe and compare demographic characteristics; frequency and type of psychiatric diagnoses; level of cognition, depression, and anxiety symptoms; and use of psychotropic medication among older adults in dementia-specific assisted living (DSAL) and traditional assisted living (TAL) residences. Secondary analysis of screening data collected during a cross-sectional, descriptive pilot project compared 18 participants from two DSAL facilities and 28 participants from three TAL facilities. DSAL participants with dementia were more cognitively impaired than TAL participants with dementia ($p < 0.001$) and used more antipsychotic (67%), anxiolytic (60%), antidepressant (53%), and cognitive-enhancing (87%) medications. No statistically significant differences in demographic factors or levels of anxiety or depression were observed among residents in either setting.

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Assisted living (AL) residences are a rapidly growing segment of the long-term care (LTC) continuum selected by older adults and their families. Currently, AL residences serve more than 1 million older adults, and that number is expected to continue to increase (Arehart-Treichel, 2003). During the past 10 years, an increasing body of AL research has identified a number of issues and concerns related to the care of older adults with dementia in this setting (Hawes, Rose, & Phillips, 1999;R.A. Kane, Chan, & R.L. Kane, 2007; Lewin-VHI, Inc., 1996; Rosenblatt et al., 2004; Schulz, 2005; Zimmerman, Sloane, & Eckert, 2001). Ironically, many of the same features that make AL attractive to older adults, including increased privacy, choice, and the absence of federally determined care policies that permit a more homelike and less "institutional" climate, have raised important questions about the adequacy of AL care for those with cognitive impairment and/or dementia diagnoses.

Perhaps the most important issue is that individuals with dementia regularly seek AL as a housing alternative, whether or not dementia-specific services are in place. Estimates of dementia among AL residents range from 34% to 68% (Hawes, Phillips, Rose, Holan, & Sherman, 2003; Rosenblatt et al., 2004). The variability in rates is often attributed to the method used to identify dementia, which has included surveys of AL administrators who estimate rates (Hawes et al., 1999), direct assessment by researchers using the Mini-Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975; Zimmerman et al., 2001), and comprehensive psychiatric and memory evaluations to diagnose dementia following the criteria of the *Diagnostic and Statistical Manual of Mental Disorders,* fourth edition, text revision (*DSM-IV-TR*) (American Psychiatric Association [APA], 2000; Rosenblatt et al., 2004). Of note, comprehensive diagnostic assessments resulted in 68% of residents being identified as having dementia and another 10% as having other non-dementia cognitive impairments (Rosenblatt et al., 2004).

Another important observation is that a substantial proportion (34% to 56%) of individuals with dementia in AL experience behavioral and psychological symptoms (Boustani et al., 2005; Gruber-Baldini, Boustani, Sloane, & Zimmerman, 2004), including depression (42%) (Boustani et al., 2005) and functional decline (Golant, 2004), and that psychotropic medication use is common (53%) (Gruber-Baldini et al., 2004). Additional research comparing older adults with dementia in AL to those in nursing facilities suggests that their characteristics are remarkably similar, as both groups have substantial physical, mental, and functional needs (Beattie, Song, & LaGore, 2005; Schulz, 2005).

Issues related to aging in place in AL for those with dementia has been called into question by investigations of dementia-related admission and discharge policies (Aud, 2004; Aud & Rantz, 2005), lengths of stay, and rates of discharge to nursing homes (Kopetz et al., 2000; Sloane et al., 2005). A related concern—the number, type, education, and dementia-specific training of staff who care for AL residents—has provided important documentation that the presence of nurses in AL is associated with superior outcomes of care (Boustani et al., 2005; Wallace, 2003).

As the characteristics and needs of individuals with dementia in AL have been identified and described in the literature, many states have revised AL-related policies to better address the needs of AL residents with dementia. The *Assisted Living State Regulatory Review,* issued by the National Center for Assisted Living (NCAL), has summarized policies related to Alzheimer's unit requirements since 2001 (NCAL, 2001) and staff training for Alzheimer's care since 2003 (NCAL, 2003). This yearly summary highlights the variability in state-determined requirements for dementia care in AL facilities. For example, in the 2009 review, requirements for Alzheimer's units range from clearly specified requirements for screening and approving residents (p. 3) to requiring disclosure statements related to

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services (p. 59), to having a single requirement for inservice education on treatment of behavioral symptoms (p. 68) (NCAL, 2009).

However, in both state policies (as described in the *Assisted Living State Regulatory Review*) and dementia-related AL research, little attention is given to differentiating characteristics of individuals or care provided in dementia-specific AL (DSAL) *residences*, from care provided in dementia-specific *units* within larger traditional AL (TAL) residences, from dementia *care practices* provided in TAL residences that serve older adults with and without dementia. The relative confusion about *dementia-specific* AL facilities, units, and practices is considerable. As a result, older adults, family members, and health care providers may erroneously make assumptions related to this tremendously diverse and rapidly changing setting of care.

To our knowledge, only one report to date has directly compared characteristics of older adults who reside in TAL and DSAL units or facilities. Samus et al. (2008) reported on an exploratory study that compared residents with dementia ($n$ = 134) living in DSAL settings ($n$ = 24) to those in non-dementia-specific AL care ($n$ = 110). Those living in dementia-specific care units were more cognitively impaired, had significantly more anxiety and aberrant motor behavior, and spent more hours engaged in group activities than individuals in non-dementia-specific TAL care. However, functional impairment, extent of medical illness, caregiver time, quality of life, caregiver burden, psychotropic drug use, and discharge to nursing homes did not differ between the groups (Samus et al., 2008).

The purpose of this article is to describe and compare demographic characteristics and mental health variables among older adults in DSAL and TAL settings, including the frequency of dementia and other psychiatric diagnoses; level of cognitive ability, anxiety, and depression symptoms; and the frequency and type of psychotropic medications prescribed. Residents with and without dementia diagnoses are included to provide a broad view of the phenomenon of interest. This article will increase nurses' awareness regarding the extent and treatment of mental health and cognitive impairment issues in both DSAL and TAL settings, challenges that are expected to increase given the growing aging population, the preference of older adults and their families for AL versus nursing home care, and the increasing frailty of the AL population. Indeed, gerontological nurses are in an important position to provide both education and consultation to AL staff regarding nonpharmacological alternatives to potentially dangerous and ineffective psychotropic medications.

## STUDY BACKGROUND

The study described in this article is a secondary analysis of screening data collected during a pilot project to establish the feasibility of implementing a multi-modal dementia intervention based on the Progressively Lowered Stress Threshold (PLST) model of care (Hall & Buckwalter, 1987) in AL settings, where the model had never been tested. According to the PLST model, anxiety symptoms signal escalation to more intense and troubling behaviors, which impede function and comfort and may contribute to discharge from AL to nursing home care (Aud, 2004).

The purposes of the feasibility pilot project were to: (a) evaluate the frequency with which older adults with dementia in AL settings experienced clinically significant anxiety in the absence of potentially confounding medical, psychiatric, or medication-related problems; (b) determine the use and potential burden of selected assessment instruments; (c) identify environmental factors (social and physical) that may cause or contribute to behavioral and

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psychological symptoms in AL; and (d) determine the number of facilities needed for a large-scale test of the PLST-based intervention in AL settings.

The pilot project included two volunteer DSAL residences in Iowa, a state where AL residences are required to be dementia-specific certified if they provide care to five or more residents assessed as being between Stages 4 and 7 on the Global Deterioration Scale (GDS) (Reisberg, Ferris, de Leon, & Crook, 1982). Notably, Iowa AL policies do not require a dementia diagnosis for admission to DSAL residences. Eighteen older adult volunteers were enrolled after gaining informed consent/assent as prescribed by our University's Institutional Review Board (IRB) procedures (described in the Method section below).

Participants were screened using the following inclusion criteria: (a) men and woman older than age 60; (b) absence of major sensory impairment; (c) availability of a decision-making representative if the person is unable to provide consent; (d) availability of an informant who has had weekly contact with the resident during the prior month and during screening, (e) meet *DSM-IV-TR* (APA, 2000) criteria for dementia and National Institute of Neurological and Communicative Diseases and Stroke/Alzheimer's Disease and Related Disorders Association (NINCDS/ADRDA) criteria (McKhann et al., 1984) for probable or possible Alzheimer's disease (AD); (f) Hamilton Anxiety Scale (HARS) (Hamilton, 1959) score of 18 or higher; (g) Cornell Scale for Depression in Dementia (CSDD) (Alexopoulos, Abrams, Young, & Shamoian, 1988a, 1988b) score of 9 or less; and (h) MMSE (Folstein et al., 1975) score between 15 and 23.

Exclusion criteria were: (a) meet *DSM-IV-TR* criteria for other current psychiatric disorders besides AD; (b) meet *DSM-IV-TR* criteria for substance abuse or dependence (past or present); (c) receiving psychotropic medications other than a cholinesterase inhibitor; (d) history or presence of significant neurological conditions; (e) have one or more active, unstable medical conditions that impairs cognition and psychosocial function; and, in the investigator's judgment, (f) require immediate treatment for severe mental distress. None of the 18 participants met all of the inclusion criteria, and most met at least one of the exclusion criteria. Anxiety symptoms were regularly below the designated cut-off point, and most participants were taking one or more psychotropic medications.

Given the frequency of psychotropic medication use among the DSAL participants (which was believed to influence levels of anxiety), the study was expanded to include three additional AL residences that were licensed to provide TAL services. The rationale for this modification was to explore whether TAL residents, who theoretically were in the earlier stages of dementia, may experience dementia-related anxiety but may not yet be medicated.

An additional 28 participants were enrolled and screened following IRB policies and using study inclusion and exclusion criteria. As before, none of these additional participants met all inclusion criteria, and most met at least one of the exclusion criteria related to psychotropic medications. As a result, the plan for the PLST intervention trial was altered, and secondary analyses of pilot data ($N = 46$ participants) were undertaken to better understand the characteristics of the sample. Data described in this article were collected during this pilot project.

## SECONDARY ANALYSIS

The primary aim of this secondary analysis was to describe and compare characteristics of residents with dementia living in DSAL and TAL care settings, including their demographic characteristics; type and prevalence of cognitive and psychiatric disorders; level of cognition, depression, and anxiety symptoms, and psychotropic medication use. Because of the diversity in AL settings, each of the four aims compares findings for the group as a

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whole with characteristics of participants in DSAL and TAL settings, and more discretely, participants with dementia residing in DSAL and TAL settings. The methods described in this article reflect procedures used in the pilot project described above and parameters specific to the aims of the secondary analysis.

## Procedures

**Enrollment—**The informed consent process was conducted in compliance with our University's IRB policies related to the involvement of adult participants who may lack capacity to sign informed consent. Per those policies, residence in a DSAL setting implied sufficient impairment to warrant consent from the resident's proxy decision maker. In the DSAL settings, family members were notified about the study, invited to meet with the researchers, and asked to sign informed consent documents on behalf of their family member. All DSAL participants (for whom informed consent was secured) were asked by the investigators for their assent to participate prior to screening. DSAL facility participants were enrolled and screened over an 8-month period.

Older adults living in TAL, which is considered "housing with services," were not prejudged as having impairments. TAL facility residents were directly invited to participate in the study, and if interested, were assessed for their capacity to understand the study's purpose using an IRB-supported format. All residents in the TAL group were considered able to sign informed consent on their own behalf. As a courtesy to family members and with the participant's permission, investigators mailed an informational letter about the study to the participant's preferred family members. TAL participants were enrolled and screened over a 4-month period.

**Assessment—**Two geropsychiatric advanced practice nurses with equivalent training and experience in administering the selected standardized scales and 20 years of shared research collaboration collected the data. Standardized assessment packets that included administration of standardized scales with the participants were developed and used, supplemented by collateral interviews and proxy report by AL caregivers; specially designed forms were used to systematically complete chart and medication record reviews, and to assess aspects of the social and physical environment related to PLST principles; and narrative field notes were completed related to barriers or issues that might be relevant to later research.

The sequence of data collection (chart/medication review, caregiver interview, participant interview) varied according to the availability of resources during the onsite visit. Weekly meetings were held among the investigators to discuss and compare data collection experiences, progress, and the usefulness of methods used, as well as review the detailed notes taken during assessments. This process helped ensure shared understanding of procedures and consistency in the administration of assessment scales and data-gathering tools.

## Sample and Settings

All facilities, and participants within the facilities, were volunteers invited by the investigators to participate in the pilot study. Eighteen participants were recruited from two DSAL residences that were comparable in size, serving 24 and 30 older adults, respectively. A total of 28 participants were recruited from one small, one moderately sized, and one large TAL residence that served 14, 44, and 68 older adults, respectively. All facilities provided essentially the same level of care and care practices. Shared characteristics of these residences included the vast majority of direct care provided by universal workers, who assisted with meals, housekeeping, and personal care assistance; licensed nursing oversight

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on weekdays during daytime hours; private dwellings; and service plans that offered meals, laundry, transportation, medication assistance, and health monitoring, all as needed.

## Instruments

Data were collected using three psychometrically valid and reliable scales commonly used in geropsychiatric practice and research. Scales were rated by clinicians during interviews with older adults and AL caregivers as indicated by the scale.

**MMSE—**Level of cognitive impairment was assessed using the MMSE, a brief mental status scale that evaluates 11 areas of cognition. The MMSE is scored from 0 to 30, with lower scores indicating greater impairment (Folstein et al., 1975). Tombaugh and McIntyre (1992) reported internal consistency ranging from 0.68 to 0.96 and test-retest reliability of 0.80 to 0.95. Correlation between the MMSE and other cognitive screening suggests good validity ($r$ = 0.70 to 0.90) (Tombaugh & McIntyre, 1992). The widely accepted cut-off score of 23 or less was used to indicate clinically significant cognitive impairment (R.L. Kane & R.A. Kane, 2000), and estimated severity of impairment used the following categories: mild (score = 17 to 23), moderate (score = 11 to 16), and severe (score = 0 to 10) dementia (Sloane, Zimmerman, & Ory, 2001).

**HARS—**The HARS is composed of 14 items related to apprehensive expectation, fear, motor tension, cognitive impairment, depression, and anxiety-related physical symptoms that are rated on the basis of clinician interview and observation (Hamilton, 1959). Items are scored from 0 to 4, for a total score range of 0 to 56, where less than 17 indicates mild anxiety, 18 to 24 mild to moderate anxiety, 25 to 30 moderate to severe anxiety, and 31 to 56 severe anxiety (Hamilton, 1959). Validation studies conducted with older adults with generalized anxiety disorder provide psychometric support for use of the tool with older adults, including internal consistency (Cronbach's alpha coefficient = 0.77 to 0.86), interrater reliability (0.70 to 0.74) for somatic anxiety and psychic anxiety, and correct classification of those with generalized anxiety disorder (94%) and control participants (94%) (Beck, Stanley, & Zebb, 1999; Diefenbach et al., 2001). Dementia-related anxiety is often characterized by the frequency and type of anxiety symptoms (Ferretti, McCurry, Logsdon, Gibbons, & Teri, 2001; Smith et al., 2008; Teri et al., 1999), resulting in use of descriptive approaches in this analysis.

**CSDD—**Depression was assessed using the CSDD (Alexopoulos et al., 1988a, 1988b), a 19-item scale that addresses mood, behavioral symptoms, physical signs, cyclic function, and ideational disturbance. The CSDD is scored by a clinician and uses a combination of interview, observation, proxy report of a person who knows the participant well, and information obtained from the participant's chart. Individual items are scored from 0 (*absent*) to 2 (*severe*), which yields a total score ranging from 0 to 38. The CSDD was tested on older adults with and without cognitive impairment with good results. In both groups, the CSDD had high interrater reliability and internal consistency (weighted kappa = 0.67; Cronbach's alpha coefficient = 0.84 for those with cognitive impairment; Cohen's kappa = 0.74; Kuder-Richardson's coefficient = 0.98 for those who are cognitively intact) (Alexopoulos et al., 1988a, 1988b). A score of 7 or higher on the CSDD is associated with clinically significant depression (Watson et al., 2006).

## Chart Review and Facility Observation

Resident charts, medication administration records, and narrative notes maintained by universal workers (the primary direct care staff in all residences) were reviewed for information related to participants' history and current care. Personal and demographic information, including age, marital status, reason for admission, medical and psychiatric

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diagnoses, and number and type of medications taken were recorded based on information maintained in residence records. Narrative notes were also reviewed for references to behaviors included on the CSDD scale.

### Data Analysis

Data were analyzed using SPSS version 12.0 for Windows and SAS version 8. Descriptive statistics and measures of central tendency were used to examine patterns and responses. Because data from participants in TAL settings did not follow a normal distribution, nonparametric tests (e.g., Kruskall-Wallis and Fisher's exact tests) were used to examine differences. Frequency distributions were used to examine trends related to anxiety and depression symptom endorsement.

## RESULTS

### Demographic Characteristics

To address the first research aim, differences in demographic characteristics between all participants living in DSAL and TAL settings were compared using the Kruskall-Wallis test to compare age and length of stay, and the Fisher's exact test to compare gender and marital status. No statistically significant differences were found. As shown in Table 1, the majority in both groups was women and widowed. Length of stay ranged from 1 to 63 months in DSAL and 5 to 56 months in TAL, resulting in nearly identical average lengths of stay (21 months) for both groups. Only 2 of 46 participants were Black, a finding that is reflective of the homogeneous racial composition of the state in which data were collected.

### Cognitive and Psychiatric Disorders

The second research aim examined prevalence and types of cognitive and psychiatric disorders. Chart review indicated that 83% of DSAL (15 of 18) and 32% of TAL (9 of 28) participants had a diagnosis of dementia in their medical records. As noted in Table 2, the type of dementia was not specified in approximately half the cases. Depression was the most frequent non-cognitive psychiatric diagnosis and affected participants with and without dementia diagnoses in approximately equal proportions in both settings.

Thirty-nine percent of all DSAL participants (7 of 18) and 36% of all TAL (10 of 28) participants had depression diagnoses. Among those with dementia diagnoses, comorbid depression occurred in 26% of DSAL (4 of 15) and 33% of TAL (3 of 9) participants. Participants with dementia in DSAL were also diagnosed with anxiety, anxious depression, and paranoia or delusions. These psychiatric diagnoses were not found among TAL participants with dementia. Among participants without dementia diagnoses, 100% in DSAL (3 of 3) and 42% (8 of 19) had anxiety or depression diagnoses.

### Cognitive Impairment and Depression and Anxiety Symptoms

The third research aim sought to describe and compare the frequency with which DSAL and TAL residents experienced cognitive impairment and depression and anxiety symptoms. A three-step approach was used to examine symptom levels. First, differences in total instrument scores (MMSE, HARS, CSDD) were examined for residents in DSAL and TAL settings. Next, differences between participants with and without dementia diagnoses in DSAL and TAL settings were examined. Finally, frequency distributions were examined to determine how many and what type of symptoms were endorsed.

Scores on the MMSE ranged from 0 to 27 for the group as a whole ($N = 46$), with a median of 21.5 and a mean of 19.8 ($SD = 6.6$). As expected, participants residing in DSAL ($n = 18$) were more cognitively impaired than those in TAL ($n = 28$). The mean MMSE scores were

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13.9 (*SD* = 6.5) in the DSAL group and 23.5 (*SD* = 3.1) in the TAL group, with a statistically significant difference ($p < 0.001$) (Table 3).

Participants with dementia diagnoses who resided in DSAL settings were significantly more cognitively impaired than those with dementia diagnoses in TAL settings ($p = 0.001$). Among participants without dementia diagnoses, those in DSAL settings were also significantly more impaired in cognitive function than participants without dementia diagnoses living in TAL settings ($p = 0.047$).

Scores on the MMSE were categorized using cut-off points for severe to no dementia (Sloane et al., 2001). As shown in Table 4, participants with dementia living in DSAL settings included those with mild (33%), moderate (47%) and severe (20%) dementia. The three DSAL participants who did not have a diagnosis of dementia on record were categorized using the MMSE as having none (MMSE score greater than 24), moderate, and severe dementia, respectively. Among TAL participants with dementia diagnoses, 44% scored 24 or higher on the MMSE (indicating no dementia), 44% were in the mild dementia range, and 11% had moderate dementia. Among TAL participants without a dementia diagnosis on record, 37% were in the mild dementia range.

Anxiety symptoms were generally mild in the group as a whole ($N = 46$); HARS scores ranged from 0 to 32 with a median of 4 and a mean of 6.3 (*SD* = 7.2). No statistically significant differences were found in HARS scores between participants in DSAL and TAL settings, or among those with and without dementia diagnoses in the two settings (Table 3).

Frequency distributions of total HARS scores (Table 4) revealed that 73% (11 of 15) participants with dementia in DSAL settings and 28% (5 of 18) participants without dementia in TAL settings had no anxiety symptoms. All remaining participants had one or more anxiety symptoms, and scores tended to be lower than 15. Participants in TAL settings tended to have more anxiety symptoms, as 81% of TAL participants compared with 39% of DSAL participants endorsed one or more anxiety symptoms. Scores above the HARS cut-off point (>17) for moderately severe anxiety were observed in 17% (3 of 18) participants without dementia in TAL settings, but not other subgroups. (Note that data were missing for 1 individual each on the HARS and CSDD.)

Examination of individual item frequencies indicated that every possible response item (14/14 HARS symptoms) was endorsed by participants (data not shown). Among all participants who had positive scores on the HARS (>1), anxious mood was the most frequently endorsed symptom, followed by intellectual difficulties (e.g., poor concentration, memory impairment) and depressed mood. The least frequently endorsed symptoms were somatic manifestations of anxiety, including sensory, cardiovascular, and respiratory symptoms.

Depression scores were also mild among participants as a whole ($n = 45$), as CSDD scores ranged from 0 to 13 with a median of 3 and a mean of 3.31 (*SD* = 2.9). As indicated in Table 3, no statistically significant differences were found in CSDD scores when participants in DSAL and TAL settings were compared or when participants with and without dementia diagnoses were evaluated ($p = 0.773$ and $p = 0.153$, respectively).

Frequency distributions of CSDD total scores among participants with dementia diagnoses indicated that 80% in DSAL settings and 89% in TAL settings endorsed one or more depression symptoms. Among participants without dementia, 100% of those in DSAL settings and 89% in TAL settings endorsed one or more depression symptoms. Scores in all groups tended to be low, with 13% of the group meeting the cut-off point (>7) for clinically significant depression.

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Examination of individual item frequencies indicated that all possible CSDD symptoms (19 of 19) were endorsed by participants (data not shown). Among all participants who scored positively on the CSDD (>1), sadness was the most frequently endorsed symptom, followed by lack of reactivity to pleasant events and irritability. The least frequently endorsed symptoms were suicidal ideation, poor self-esteem, and mood-congruent delusions.

### Psychotropic Medication Use

The fourth research aim examined psychotropic medication use. Use of psychotropic and cognitive-enhancing medications was common among the group as a whole ($N = 46$) (Table 5). A total of 68 medications were prescribed to 33 participants, resulting in 72% of the sample taking one or more medication. The two most common categories prescribed were antidepressant agents (44%) and cognitive-enhancing (44%), followed by antipsychotic (26%), anxiolytic (26%), mood-stabilizing (7%), and sedative/hypnotic (2%) medications.

More than half of DSAL participants with dementia diagnoses were taking antidepressant (53%), antipsychotic (67%), anxiolytic (60%), and cognitive-enhancing (87%) agents, with 53% taking two or more of these medications. The 3 DSAL participants who did not have a dementia diagnosis were prescribed antidepressant (67%), antipsychotic (33%), and mood-stabilizing (33%) medications but not a cognitive-enhancing medication.

By comparison, TAL participants with dementia diagnoses were prescribed antidepressant (33%) and cognitive-enhancing (78%) agents but not antipsychotic or anxiolytic medications. Psychotropic use among TAL participants without dementia diagnoses included antidepressant (37%), anxiolytic (16%), mood-stabilizing (11%), antipsychotic (5%), and sedative/hypnotic (5%) medications. Significant differences were found between DSAL and TAL residents in the use of antipsychotic ($p < 0.001$), anxiolytic ($p = 0.02$), and cognitive-enhancing ($p < 0.001$) medications, with DSAL residents taking more psychotropic medications in all these categories.

## DISCUSSION

The findings of this pilot study suggest that the differences between older adults living in DSAL and TAL residences in Iowa are minimal in many ways. The demographic characteristics of participants with and without dementia, as well as the frequency of anxiety and depression symptoms, were comparable in TAL and DSAL settings. As expected, participants in DSAL settings were more cognitively impaired than those in TAL settings. Statistically significant differences in cognitive level were observed when all participants in DSAL and TAL settings were compared, and when only those with dementia diagnoses were compared. In tandem with the greater severity of cognitive impairment, participants in DSAL settings were more likely to be taking one or more psychotropic medication and cognitive-enhancing drug compared with participants with dementia in TAL settings.

An important observation in both DSAL and TAL care was the lack of documented dementia diagnoses to support the level of impairment suggested by MMSE scores. Fifteen of 18 DSAL participants (83%) had dementia diagnoses on file, but 3 did not. Among those 3, 1 scored in the *none* range (suggesting lack of significant impairment), whereas the others scored in the moderate and severe range (suggesting substantial impairment). According to family report, the DSAL participant who scored in the MMSE *none* range (>24) had not undergone a dementia assessment and had a well-documented history of lifelong depression, as well as inappropriate, impulsive, and psychotic-like behaviors that precipitated his admission to the dementia unit. Notably, none of these 3 DSAL participants were prescribed cognitive-enhancing medications, a practice that was common for those with dementia diagnoses in this setting (72%).

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Among TAL participants, 32% (9 of 28) had a dementia diagnosis on file, and within that group 44% (4 of 9) had MMSE scores in the *none* category (>24). Among the 19 TAL residents who did not have dementia diagnoses, 37% (7 of 19) had MMSE scores in the mild category (score = 17 to 23).

A number of potential explanations exist for the observed discrepancies between MMSE scores and presence of a dementia diagnosis. The most obvious is that the differences are small, not statistically significant, and thus not relevant. Alternatively, the MMSE may misclassify participants due to their education level (which was not assessed in this study). However, another equally important issue is that Iowa's administrative rules do not require a diagnosis of dementia for placement in a DSAL unit or facility.

As in many other states, Iowa's administrative rules do not require that individuals who receive care in DSAL settings have a comprehensive assessment leading to a dementia diagnosis. Similarly, a dementia diagnosis in the medical record, or even use of a cognitive rating scale like the MMSE, is not required. Instead, placement in DSAL is based on subjective ratings by AL staff using the GDS (Reisberg et al., 1982), a scale that has been criticized for lacking empirical validity (R.L. Kane & R.A. Kane, 2000) and both under- and over-estimating abilities (Cohen-Mansfield et al., 1996).

The use of a single and subjective assessment as the criterion for admission to DSAL introduces several risks. Using subjective scales that are applied largely by untrained AL staff and the absence of a comprehensive diagnostic assessment to determine the cause of functional deterioration may result in missing a treatable medical problem or other important factors that mimic dementia and, in turn, unnecessarily placing the person in a setting that simultaneously protects and confines residents using various security devices. In addition, in AL residences that offer both TAL and DSAL care, residents may be transferred from one unit to another at the discretion of staff who may be more motivated by financial factors, such as occupancy, than the match of services to unmet resident needs. Therefore, we recommend that AL policies require a comprehensive assessment to determine dementia.

Another important observation in this analysis was the occurrence of comorbid psychiatric problems with dementia, particularly among participants in DSAL settings. Although the medical records did not permit us to determine whether the psychiatric disturbance was present prior to dementia or arose in tandem with dementia, the frequency of anxiety, depression, and psychotic diagnoses was notable, as was the treatment of psychiatric symptoms with antidepressant, anxiolytic, and antipsychotic medications. In contrast to findings reported by Samus et al. (2008), who reported no differences between DSAL and TAL participants with dementia regarding psychotropic medication use, participants in this analysis with dementia in DSAL settings took substantially more medications than those in TAL settings. In addition, the proportion of participants prescribed one or more psychotropic medication in this group was notable.

The relatively low levels of anxiety and depression symptoms (not diagnoses) are also of interest. Reports in the literature suggest that clinically significant depression symptoms affect 24% of AL residents (Watson et al., 2006). In contrast, only 13% (6 of 45) of participants in this study were above the CSDD threshold (>7) for clinically significant depression, perhaps owing to antidepressant medication use (44%).

Similarly, anxiety symptoms among older adults with dementia have been reported to be as high as 70% among community-dwelling older adults (Teri et al., 1999) and to affect 22% of older adults with and without dementia diagnoses in AL settings (Smith et al., 2008). In these studies, however, anxiety was defined as the presence of one or more psychological symptoms of anxiety (e.g., apprehensive expectation, unrealistic worry/fear) as opposed to a

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cut-off point on an anxiety scale such as the HARS. When the definition of anxiety as "one or more anxiety symptom" was applied to study participants with dementia diagnoses, 20% of those in DSAL and 100% in TAL settings expressed anxiety. Similarly, the majority of participants without dementia diagnoses also endorsed anxiety symptoms, including 100% of DSAL and 72% of TAL participants. Notably, psychological symptoms on the HARS (i.e., anxious mood, intellectual difficulties, depressed mood) were the most commonly endorsed items, whereas somatic symptoms (i.e., sensory, cardiovascular, respiratory) were the least frequently endorsed.

## LIMITATIONS

The study limitations include the small sample and predominance of White women, use of cross-sectional data that were collected in a single state, nonrandom assignment to care setting, lack of behavioral symptom data for participants, and lack of environmental and staff data related to the AL settings. In addition, the scales used to quantify cognitive level and anxiety may have been less than optimal to capture the phenomenon of interest. Participants' years of education, which were not assessed in this study, have been associated with the sensitivity and specificity of the MMSE, leading to misclassification (Tombaugh & McIntyre, 1992). Thus, use of the MMSE to gauge presence and severity of dementia must be interpreted with caution. In addition, the HARS is often used with older adults, including those with dementia. However, somatic anxiety symptoms that represent physiological arousal and distress (7 of 14 items) may not tap the most important features of anxiety in older adults overall or in individuals with dementia. Despite these limitations, the study provided important insights related to participants in DSAL and TAL settings that may be used to inform nursing practice and guide additional research in this important and growing LTC setting.

## CONCLUSIONS AND IMPLICATIONS FOR PRACTICE AND RESEARCH

Maintaining independent and private living is a major advantage of residing in AL, making AL an attractive alternative to nursing home care when assistance is needed. As more older adults choose AL as a place to live out their later years, dementia-related and psychiatric diseases are expected to become even more prevalent in this setting, making care and treatment of this population an increasing concern for families and care providers alike.

The findings of this pilot study add to the growing body of AL literature that documents the frequency with which mental health challenges such as dementia, depression, and anxiety occur among AL residents overall. In addition, this study provides important information related to the frequency with which psychotropic medications are used by AL residents. Unlike nursing facilities that are required by Centers for Medicaid and Medicare Services (n.d.) rules to systematically review the use of antipsychotic, anxiolytic, and antidepressant medications, no federal regulations currently guide the use of these medications among AL residents. This issue is a particular concern given the low use of nurses in AL nationwide and reliance on medication technicians who may not recognize risks and untoward side effects (Hawes et al., 2003).

Furthermore, the description of participants with and without dementia diagnoses in the two AL settings facilitates better understanding of similarities and differences among older people living in DSAL and TAL facilities. The tendency of researchers to investigate and report on AL populations "as a whole" may easily mask important differences and needs among residents in both DSAL and TAL settings. Health care professionals who provide services to residents in AL must be ever mindful of setting-specific differences among AL residents and the many challenges created by the conflict caused by the widely held view

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that AL is “housing, not health care,” yet older adults with both medical and psychiatric problems are housed.

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2. Read each question and record your answers. After completing all questions, compare your answers to those provided at the end of the quiz.
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### Activity Objectives

1. Identify the prevalence of dementia in assisted living (AL) facilities.
2. Identify the prevalence of behavioral and psychological symptoms and psychotropic medication use for residents with dementia in AL facilities.
3. Compare and contrast characteristics of older adults with dementia who reside in dementia-specific and traditional AL facilities.
4. Describe the results of the study conducted by the authors.
5. Describe implications for practice and research identified by the authors.

### Author Disclosure Statement

Dr. Kang, Dr. Smith, Dr. Buckwalter, Dr. Ellingrod, and Dr. Schultz disclose that they have no significant financial interests in any product or class of products discussed

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directly or indirectly in this activity. This project was supported by the National Institute of Nursing Research (NINR/F33NR009156), The University of Iowa Gerontological Nursing Interventions Research Center (NIH #P30 NR03979; Toni Tripp-Reimer, PI), and the Hartford Center of Geriatric Nursing Excellence (Kathleen C. Buckwalter, PI). The contents are solely the responsibility of the authors and do not represent official views of the NINR nor the John A. Hartford Foundation.

**KEYPOINTS**

**Anxiety, Depression, and Cognitive impairment**

Kang, H., Smith, M., Buckwalter, K.C., Ellingrod, V., & Schultz, S.K. (2010). **Anxiety, Depression, and Cognitive Impairment in Dementia-Specific and Traditional Assisted Living.** *Journal of Gerontological Nursing, 36*(1), 18–30.

1. As more older adults choose assisted living (AL) as a place to live out their later years, dementia-related symptoms and psychiatric disorders are expected to become even more prevalent in this setting.
2. Residents living in dementia-specific AL (DSAL) and traditional AL (TAL) did not differ on demographic characteristics or levels of anxiety and depression but did differ on levels of cognitive impairment.
3. Residents with dementia in DSAL used more antipsychotic, anxiolytic, antidepressant, and cognitive-enhancing medications than those in TAL.
4. A comprehensive assessment needs to be conducted to diagnose dementia and plan for care in DSAL facilities to meet the needs of older adults with different levels of cognitive impairment.

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## TABLE 1

DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

| Variable | Total (*N* = 46) | DSAL (*n* = 18) | TAL (*n* = 28) | *p* Value |
|---|---|---|---|---|
| Age, mean (*SD*) | 83.89 (7.23 years) | 82.9 (8 years) | 84.5 (6.8 years) | 0.73 |
| Gender, *n* (%) | | | | 1.00 |
| Women | 34 (73.9) | 13 (72.2) | 21 (75) | |
| Men | 12 (26.1) | 5 (27.8) | 7 (25) | |
| Marital status, *n* (%) | | | | 0.37 |
| Widowed | 29 (63) | 13 (72.2) | 16 (57.1) | |
| Married | 11 (23.9) | 3 (16.7) | 8 (28.6) | |
| Separated/divorced | 5 (10.9) | 1 (5.6) | 4 (14.3) | |
| Single | 1 (2.2) | 1 (5.6) | 0 (0) | |
| Length of stay in months, mean (*SD*) | 20.65 (15.9) | 20.7 (15.6) | 20.6 (16.3) | 0.64 |

Note. DSAL = dementia-specific assisted living settings; TAL = traditional assisted living settings. Percentages may not equal 100 due to rounding.

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**TABLE 2**

TYPE AND PREVALENCE OF PSYCHIATRIC DISORDERS AMONG DSAL AND TAL PARTICIPANTS

| | DSAL (*n* = 18) | | | TAL (*n* = 28) | |
|---|---|---|---|---|---|
| **Diagnosis**[a] | **Total (*N* = 46)** | **Dementia Diagnosis (*n* = 15)** | **No Dementia Diagnosis (*n* = 3)** | **Dementia Diagnosis (*n* = 9)** | **No Dementia Diagnosis (*n* = 19)** |
| | ***n* (%)** | ***n* (%)** | ***n* (%)** | ***n* (%)** | ***n* (%)** |
| Dementia | 24 (52) | 15 (83) | 0 (0) | 9 (32) | 0 (0) |
| Type not specified | [11] | [7] | | [4] | |
| Alzheimer's disease | [6] | [4] | | [2] | |
| Vascular dementia | [1] | [1] | | | |
| Frontotemporal | [2] | [1] | | [1] | |
| Lewy body | [2] | [2] | | | |
| Other[b] | [2] | | | [2] | |
| Anxiety[c] | 6 (13) | 4 (27) | 1 (33) | 0 (0) | 1 (5) |
| Depression[c] | 17 (37) | 4 (27) | 3 (100) | 3 (33) | 7 (37) |
| Anxious depression[c] | 1 (2) | 1 (7) | 0 (0) | 0 (0) | 0 (0) |
| Paranoia/delusions[c] | 2 (4) | 2 (13) | 0 (0) | 0 (0) | 0 (0) |

Note. DSAL = dementia-specific assisted living settings; TAL = traditional assisted living settings.

[a] Numbers in brackets provide detail regarding the types of dementia and are subsumed in the number of participants with dementia.

[b] Other diagnoses included organic brain syndrome (n = 2).

[c] Percentages were calculated from the number of participants within the Dementia/No Dementia Diagnosis subgroup, rather than the total number within that setting (DSAL versus TAL).

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**TABLE 3**

COMPARISON OF COGNITION, ANXIETY, AND DEPRESSION SCORES BY TYPE OF FACILITY FOR RESIDENTS WITH AND WITHOUT DEMENTIA

| | DSAL | | | TAL | | | |
|---|---|---|---|---|---|---|---|
| **Scale** | **Mean (*SD*)** | **Median** | **Range** | **Mean (*SD*)** | **Median** | **Range** | ***p* Value** |
| | **All Participants (*n* = 18)** | | | **All Participants (*n* = 28)** | | | |
| MMSE | 13.9 (6.5) | 15 | 0 to 24 | 23.5 (3.1) | 24 | 14 to 27 | <0.001 |
| HARS | 4.5 (4.1) | 5 | 0 to 12 | 7.4 (8.4) | 4 | 0 to 32 | 0.41 |
| CSDD | 3.9 (3.6) | 2.5 | 0 to 13 | 2.9 (2.5) | 3 | 0 to 8 | 0.48 |
| | **Dementia Diagnosis (*n* = 15)** | | | **Dementia Diagnosis (*n* = 9)** | | | |
| MMSE | 13.1 (6.5) | 15 | 0 to 21 | 22.6 (3.6) | 23 | 14 to 26 | 0.001 |
| HARS | 4.1 (3.9) | 4.5 | 0 to 10 | 5.7 (5.5) | 4 | 1 to 15 | 0.441 |
| CSDD | 3.3 (2.9) | 2.0 | 0 to 10 | 3.0 (2.2) | 3 | 0 to 8 | 0.773 |
| | **No Dementia Diagnosis (*n* = 3)** | | | **No Dementia Diagnosis (*n* = 19)** | | | |
| MMSE | 18 (5.3) | 16 | 14 to 24 | 24 (2.8) | 25 | 19 to 27 | 0.047 |
| HARS | 6 (5.6) | 5 | 1 to 12 | 8.2 (9.6) | 4 | 0 to 32 | 0.879 |
| CSDD | 6.7 (5.7) | 5 | 2 to 13 | 2.9 (2.6) | 2 | 0 to 8 | 0.153 |

Note. CSDD = Cornell Scale for Depression in Dementia; DSAL = dementia-specific assisted living settings; HARS = Hamilton Anxiety Rating Scale; MMSE = Mini-Mental State Examination; TAL = traditional assisted living settings.

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**TABLE 4**

FREQUENCY OF MMSE, HARS, AND CSDD SCORES AMONG STUDY PARTICIPANTS

| | DSAL (*n* = 18) | | TAL (*n* = 28) | |
|---|---|---|---|---|
| **Scores** | **Dementia Diagnosis (*n* = 15)** | **No Dementia Diagnosis (*n* = 3)** | **Dementia Diagnosis (*n* = 9)** | **No Dementia Diagnosis (*n* = 19)** |
| MMSE[a] | | | | |
| 24 to 30 (none) | 0 | 1 | 4 | 12 |
| 17 to 23 (mild) | 5 | 0 | 4 | 7 |
| 11 to 16 (moderate) | 7 | 1 | 1 | 0 |
| 0 to 10 (severe) | 3 | 1 | 0 | 0 |
| HARS[b] | | | | |
| 0 | 11 | 0 | 0 | 5 |
| 1 to 3 | 2 | 1 | 4 | 4 |
| 4 to 6 | 2 | 1 | 2 | 1 |
| 7 to 9 | 0 | 0 | 1 | 0 |
| 10 to 12 | 0 | 0 | 0 | 3 |
| 13 to 15 | 0 | 1 | 2 | 2 |
| 22 to 24 | 0 | 0 | 0 | 2 |
| 32 | 0 | 0 | 0 | 1 |
| CSDD[b] | | | | |
| 0 | 3 | 0 | 1 | 2 |
| 1 to 3 | 6 | 1 | 6 | 10 |
| 4 to 6 | 4 | 1 | 1 | 4 |
| 7 to 9 | 1 | 0 | 1 | 2 |
| 10 to 12 | 1 | 0 | 0 | 0 |
| 13 | 0 | 1 | 0 | 0 |

Note. CSDD = Cornell Scale for Depression in Dementia; DSAL = dementia-specific assisted living settings; HARS = Hamilton Anxiety Rating Scale; MMSE = Mini-Mental State Examination; TAL = traditional assisted living settings.

[a] Categories (none to severe) are consistent with Sloane, Zimmerman, and Ory (2001).

[b] Categories are descriptive. Column totals reflect missing data for 1 individual each on the HARS and CSDD.

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**TABLE 5**

PSYCHOTROPIC AND COGNITIVE-ENHANCING MEDICATION USE AMONG STUDY PARTICIPANTS

| | | DSAL (*n* = 18) | | TAL (*n* = 28) | | |
|---|---|---|---|---|---|---|
| **Medication Category/Agent** | **Total (*N* = 46)** | **Dementia Diagnosis[a] (*n* = 15)** | **No Dementia Diagnosis[a] (*n* = 3)** | **Dementia Diagnosis[a] (*n* = 9)** | **No Dementia Diagnosis[a] (*n* = 19)** | ***p* Value** |
| | ***n* (%)** | ***n* (%)** | ***n* (%)** | ***n* (%)** | ***n* (%)** | |
| Antidepressant agents | 20 (44) | 8 (53) | 2 (67) | 3 (33) | 7 (37) | 0.23 |
| Selective serotonin reuptake inhibitors | [13] | [5] | [2] | [2] | [4] | |
| Mirtazapine (Remeron®) | [5] | [2] | | [1] | [2] | |
| Venlafaxine (Effexor®) | [2] | [1] | | [0] | [1] | |
| Antipsychotic agents | 12 (26) | 10 (67) | 1 (33) | 0 (0) | 1 (5) | <0.001 |
| Quetiapine (Seroquel®) | [7] | [6] | [1] | | | |
| Risperidone (Risperdal®) | [3] | [2] | | | [1] | |
| Haloperidol (Haldol®) | [2] | [2] | | | | |
| Anxiolytic agents | 12 (26) | 9 (60) | 0 (0) | 0 (0) | 3 (16) | 0.02 |
| Lorazepam (Ativan®) | [6] | [6] | | | | |
| Alprazolam (Xanax®) | [3] | [2] | | | [1] | |
| Buspirone (Buspar®) | [2] | [1] | | | [1] | |
| Clonazepam (Klonopin®) | [1] | | | | [1] | |
| Mood-stabilizing agents | 3 (7) | 0 (0) | 1 (33) | 0 (0) | 2 (11) | 1.00 |
| Gabapentin (Neurontin®) | [3] | | [1] | | [2] | |
| Cognitive-enhancing agents | 20 (44) | 13 (87) | 0 (0) | 7 (78) | 0 (0) | <0.001 |
| Donepezil (Aricept®) | [9] | [7] | | [2] | | |
| Galantamine (Razadyne®) | [6] | [3] | | [3] | | |
| Memantine (Namenda®) | [5] | [3] | | [2] | | |
| Sedative/hypnotic agents | 1 (2) | 0 (0) | 0 (0) | 0 (0) | 1 (5) | 1.00 |
| Temazepam (Restoril®) | [1] | | | | [1] | |

Note. DSAL = dementia-specific assisted living settings; TAL = traditional assisted living settings.

% represents percentage of column totals taking the category of medication.

Numbers in brackets provide detail regarding the types of medications and are subsumed in the number of participants taking medications in that category.

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[a] Percentages were calculated from the total number of participants within that setting.