Assessing Resistance to Activities of Daily Living in Long-Term Care

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Objective: The Psychosocial Resistance to Activities of Daily Living Index (PRADLI) was developed for psychiatric nurses, geropsychologists, and clinical social workers to assess the level of long-term care (LTC) residents' resistance to and cooperation with staff in performing activities of daily living.

Design: The PRADLI consists of 8 activities of daily living that commonly trigger a psychiatric or psychologic referral when residents resist necessary care in these domains. The PRADLI items were examined for internal consistency and test–retest reliability. Four of the 8 items overlap with most standard ADL scales, and convergent and discriminant validity was investigated using the ADL index from Katz, Ford, Moskowitz, and colleagues.

Setting and Participants: Four hundred six residents of LTC facilities were rated for levels of the previously mentioned ADL indices.

Results: The PRADLI was evidenced to be a reliable and valid assessment tool for assessing resistance to ADLs in LTC facilities.

Conclusion: The PRADLI is an instrument that can potentially be used by LTC staff to assess ADLs. Research on the use of the PRADLI as a treatment outcome instrument in multidisciplinary LTC settings is warranted. Assessing ADLs within the context of residents' cooperation with LTC is an important part of understanding residents' overall quality of life. **(J Am Med Dir Assoc 2003; 4: 313–319)**

Keywords: Long-term care; ADLs; elderly; assessment

Activities of daily living (ADL) are routinely assessed in most long-term care (LTC) facilities in the United States. Common ADLs include bathing, dressing, toileting, transferring, continence, and eating. Accordingly, there are many instruments designed to assess the levels of dependence that the LTC resident exhibits with the ADL. Four kinds of ADL assessments are briefly described and reviewed here.

Perhaps the oldest instrument assessing ADLs was developed by Katz and colleagues.[1] The Katz Index of ADL assesses bathing, dressing, toileting, transferring, continence, and eating. This index has 3 parts, in which ADLs are assessed on a dichotomous scale (independent vs. dependent), a discrete scale (a 3-pronged scale of dependence), and an overall ADL score that has 7 possible values (ranging from independent in all ADLs to dependent in all ADLs). The strengths of the instrument are that it has clearly explained criteria for each level of dependence, and it provides for a rater to judge the patient as meeting criteria for independence in some ADLs but not others.

The Barthel ADL Index is another commonly used assessment of ADLs.[2] The Barthel Index assesses level of dependence in bowels, bladder, grooming, toilet use, feeding, transfer, mobility, dressing, stairs, and bathing. These domains are rated on an ordinal scale, with 3 to 4 choices (depending on the ADL) ranging from dependent to independent. A strength of the Barthel Index was that it provided for assessments of 10 ADLs (instead of the previous 6 in the Katz instrument), thereby further operationalizing the domains of ADLs.

The Nottingham ADL scale also consists of 10 ADL scales: drink, eat, wash face, transfer bed/chair, walk indoors, toilet, undress, dress, hot drink, and get into/out of bath.[3] The Nottingham instrument is scored differently from those of Katz et al. and Barthel by using a hierarchical scoring system. That is, the ADLs are ordered in difficulty, from drink (the first ADL) to get into/out of bath (the last ADL). It is theorized that if patients cannot do the ADLs on the top of the list, then they are not likely to be able to perform the ADLs at the bottom of the list. This scoring process minimizes the time spent rating ADLs in addition to simplifying the scoring for the rater.

The ADL assessment instrument developed by Matteson and McConnell is commonly seen in nursing education.[4] This instrument includes ADLs such as eating, dressing, bathing, toileting, urinary continence, bowel continence, ambulation/mobilization, transfers (bed to chair, in/out of bath, in/out of car), and grooming. The Matteson and McConnell instrument also assesses "independent" ADLs (IADLs) such as meal preparation, shopping, money management, transportation, telephone use, medications, laundry, and housekeeping.

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Scoring for all ADLs is on a 4-point ordinal scale, including independent, minimum assistance, moderate assistance, and totally dependent.

The instruments described here have assessed the residents' level of dependence on a given ADL. However, it is also necessary to assess residents' level of cooperation in performing the ADLs that affect quality of life and staff productivity in providing care to residents. To date, there is no research examining the differentiation between residents' level of dependence on a given ADL and residents' level of cooperation with the ADL. Accordingly, there are currently no ADL assessment instruments that measure the level of cooperation that residents exhibit with the given ADL. That is, residents can be rated as being totally dependent on an ADL, but can exhibit varying levels of cooperation with the LTC staff in receiving assistance. Clinically, there is a difference between the resident who needs moderate levels of assistance with eating but who is fully cooperative and compliant with the task, and the resident who needs moderate levels of assistance with eating but is not cooperative and who resists assistance.

The Psychosocial Resistance to Activities of Daily Living Index (PRADLI) is a new scaling procedure that was developed to assess residents' cooperation with performing ADLs, in addition to their level of dependence on staff to perform the ADLs. The PRADLI was created with the input of 5 expert therapists including PhD clinical psychologists and advanced clinical social workers, along with multidisciplinary input from physicians, nurses, dietitians, physical therapists, occupational therapists, and respiratory therapists, all of whom specialize in clinical geriatrics. The PRADLI was developed to be a part of a larger assessment instrument that comprises quality-of-life and medical outcome variables. The PRADLI items were designed to reflect typical treatment goals in LTC. Observations from our multidisciplinary team indicate that psychosocial resistance adds to dependency levels and the demand on staff time and resources. Therefore, because dependency and resistance are thought to be positively associated, these 2 concepts were combined into 1 scaling unit and measured in 8 domains. The purpose of the present study was to investigate the internal and test–retest reliability and convergent/discriminant validity of the PRADLI using a popular ADL instrument, and to examine the relationships between the PRADLI and the Geriatric Depression Scale, functional impairment, level of dementia, dysfunctional behaviors, and levels of pain.

METHODS

Participants

The study sample consisted of 406 residents living in a total of 16 LTC facilities in the Dallas, Texas, area. Thirteen of the LTC facilities were skilled nursing units and 3 were long-term acute care facilities. Seventy-five percent of the sample consisted of females, and the average age was 82 years (standard deviation [SD], 9.3 y). The sample was predominantly white (89%), followed by black (4%) and Asian-American (2%). Seventy-two percent (n = 292) of the sample reported persistent pain (pain experienced most of the day) and/or recurrent pain (pain experienced most days of the week). Residents were suffering from more than 2 chronic medical conditions on average ($\bar{X} = 2.7$, SD = 1.8), the most common condition being hypertension (47%), followed by coronary artery disease (38%), cerebral vascular damage (29%), diabetes (24%), congestive heart failure (24%), atrial fibrillation (20%), chronic obstructive pulmonary disease (17%), and kidney disease (8%). The majority of the residents were functioning at the level of moderate dementia or worse (63%).

Measures

Psychosocial Resistance to Activities of Daily Living Index

These ADL scales were developed by Andrew Clifford in 2000 to measure the residents' level of functional independence and cooperation with 8 psychosocially related ADLs. The domains are rated on a 7-pronged scale, with 1 representing the lowest levels of independence and cooperation and 7 representing the highest levels of independence and cooperation (Table 1).

1. Up time. This domain records the total hours per day the resident spends out of bed. This time includes being in a wheelchair, Geri-chair, or recliners in their room. In most nonhospice cases, when not medically contraindicated, residents can benefit from time out of bed. If necessary, periods of 1 to 3 hours of "up time" can be alternated with 1 to 3 hours of bed rest. Time spent in bed can contribute to medical complications such as pressure wounds, deep vein thrombosis, upper respiratory infection, and debilitating deconditioning; therefore, whenever possible, being out of bed is thought to be an important ADL. Therapeutic goals are set with consultation from rehabilitation, medical, and nursing staff.
2. Eating habits. This domain rates the patients'/residents' ability and willingness to eat at a level to maintain appropriate weight.
3. Dressing. This domain rates the residents' ability and willingness to get dressed or changed into a different type of clothing for a necessary reason.
4. Toileting. This domain rates the patients'/residents' ability and willingness to receive assistance in maintaining some level of fecal and/or urinary continence. When the patient is legitimately incontinent, both fecal and urinary, they are rated as "Max assist." If they resist incontinence care, they are rated "Max assist–noncooperative" for toileting and dressing.
5. Bathing. This domain rates the residents' ability and willingness to bathe appropriately.
6. Medical compliance. This domain rates the residents' ability and willingness to receive and ingest medically necessary medications appropriately, and to receive appropriate nursing/rehabilitation care outside the domain of physical or occupational therapy without resistance. Examples of domains in which medical compliance would be applicable are wound care, dialysis, and respiratory care.

Table 1. *Psychosocial Resistance to Activities of Daily Living Inventory (PRADLI)*

Domain	Rating						
	1	2	3	4	5	6	7
Up time	< One hour	1–2 hours	2–4 hours	4.5–5 hours	5.5–7 hours	7.5–9 hours	> 9.5 hours
Eating Habits	Max assist Noncooperative	Max assist Cooperative	Mod assist Sometimes eats w/hands	Feeds self Resistant	Feeds self Constant cueing	Feeds self w/prep cueing	Independent Motivated
Dressing/Changing Clothes	Max assist Noncooperative	Max assist Cooperative	Mod assist Resistant	Mod assist Constant cueing	Min assist Resistant	Min assist w/prep cueing	Independent Oriented & Motivated
Toileting	Max assist Noncooperative	Max assist Cooperative	Mod assist Resistant	Mod assist Constant cueing	Min assist Resistant	Min assist w/prep cueing	Independent Oriented & Motivated
Bathing	Max assist Noncooperative	Max assist Cooperative	Mod assist Resistant	Mod assist Constant cueing	Min assist Resistant	Min assist w/prep cueing	Independent Oriented & Motivated
Medical Compliance	Max assist Noncooperative	Max assist Cooperative	Mod assist Resistant	Mod assist Constant cueing	Min assist Resistant	Min assist w/prep cueing	Independent Oriented & Motivated
Restorative Care	Max assist Noncooperative	Max assist Cooperative	Mod assist Resistant	Mod assist Constant cueing	Min assist Resistant	Min assist w/prep cueing	Independent Oriented & Motivated
Social/Recreational Participation	Inactive	1–2 hours	2–4 hours	2–5 hours	5.5–7 hours	7.5–9 hours	> 9.5 hours
	—	Personal activities	Personal activities	Personal & social activities	Personal & social activities	Personal & social activities	Personal & social activities

7. Restorative care. This domain rates the residents' ability and willingness to receive restorative nursing care that attempts to maintain current level of function after rehabilitation. Restorative care includes but is not limited to walking with standby assistance with or without a walker, time in a wheelchair, time in a Geri-chair, and attending exercise class.
8. Social/recreational activities. This domain rates the residents' ability and willingness to participate in personal hygiene and social/recreational activities that are desirable and consistent with the residents' premorbid value system or lifestyle. With consultation from nursing and occupational therapists, after being out of bed is tolerated, residents are challenged to first care for themselves before participating in social and recreational activities. This behavioral domain includes but is not limited to going to a beauty parlor or barber; shaving, combing hair, and washing face and hands appropriately; sitting in social areas and talking to others informally; and participating in formal social, recreational, and spiritual/religious activities provided by the facility and community volunteers.

For the medical compliance, restorative care, and social/recreational domains, these behavioral ratings assume (and is documented elsewhere in psychologic report) that the medical Power of Attorney agrees that treatment is necessary and desirable, and noncompliance is the result of cognitive impairment or dysfunctional behaviors associated with medical and/or psychiatric conditions. An instruction manual detailing the criteria associated with each rating of the PRADLI domains can be obtained by contacting the corresponding author.

Katz Activities of Daily Living Index

The Katz ADL Index[1] is an index of functional capacity that includes toileting, transferring, time out of bed, ambulation, personal grooming, dressing, bathing, and eating. Higher values are indicative of higher functioning.

Geriatric Depression Scale

The shortened (15-item) version of the Geriatric Depression Scale (GDS)[5] is a clinician-rated inventory that assesses depression. The GDS was standardized specifically toward the elderly population. An example of an item is "Do you think it is wonderful to be alive?" Respondents answer each item with either "yes" or "no." The 15-item version has good interrater reliability, with values ranging from 0.70 to 0.87.[6] Higher GDS values are indicative of higher depression.

Neurobehavioral Cognitive Status Examination

The Neurobehavioral Cognitive Status Examination (NCSE)[7] is a clinician-administered examination of impairment in orientation, repetition, naming, attention span, comprehension, short-term memory, constructional ability, social judgment, and calculation. The NCSE uses a differentiated approach to assess various aspects of cognitive functioning and was developed to overcome weaknesses of other brief instruments. Higher values are indicative of higher cognitive functioning; lower values are indicative of impairment. The NCSE has good reliability and validity indicators, and has been evidenced to have a low false-negative rate.[8]

Table 2. *Descriptive Statistics for PRADLI*

PRADLI Item	Mean	SD
Up time	4.24	1.91
Eating habits	4.75	1.57
Dressing	3.84	1.73
Toileting	3.49	1.82
Bathing	2.86	1.40
Medical compliance	5.11	1.66
Restorative care	3.70	1.63
Social/recreational	3.12	1.51

Pain Rating Scale

Residents were asked to rate the current severity of their pain on a scale of 1 to 10, with 1 representing no pain and 10 representing the worst possible pain.

Functional Assessment Staging Tool

The Functional Assessment Staging Tool (FAST)[9] is a generalized assessment of functional impairment that was designed for professionals and caregivers to chart the decline of people with Alzheimer's disease. The FAST scale has 16 stages and substages, with higher numbers representing more functional impairment and lower numbers representing less impairment.

Dysfunctional Behaviors

Residents were rated on the intensity, frequency, and duration of each of 26 possible behaviors, including agitation, verbal aggression, withdrawal, and physical aggression.

Procedure

The PRADLI, GDS, NCSE, pain rating scale, FAST, and behavior ratings were a part of neuropsychologic evaluation that was administered by a licensed clinical geropsychologist. This sample consisted of patient referrals from attending physicians to a clinical geropsychologist for reasons related to change in cognitive functioning, emotional distress, or behavioral dysfunction associated with dementia. The evaluation was verbally administered, and feedback from the LTC staff was considered when rating the items of the PRADLI.

RESULTS

Descriptive statistics for the PRADLI items are shown in Table 2. On average, the residents' level of dependence on the ADLs is at the level of "moderate" assistance. The ADL associated with the most assistance was bathing, and the ADL associated with the least assistance was medical compliance. The PRADLI demonstrated good internal consistency (α = 0.88). The median item-total correlation was $r = 0.66$ and the average interitem correlation was $r = 0.56$, suggesting items were moderately correlated with each other and with the overall total inventory. When the PRADLI items were compiled into a composite variable (using principal components

Table 3. *Correlations between PRADLI Items and Katz ADL Items*

Item	1	2	3	4	5	6	7	8	9	10	11	12
1. PRADLI: Up time	1.00											
2. PRADLI: Eating habits	.37	1.00										
3. PRADLI: Dressing	.39	.54	1.00									
4. PRADLI: Toileting	.36	.46	.78	1.00								
5. PRADLI: Bathing	.29	.40	.70	.80	1.00							
6. PRADLI: Medical compliance	.30	.65	.51	.42	.35	1.00						
7. PRADLI: Restorative care	.48	.48	.76	.78	.70	.44	1.00					
8. PRADLI: Social/recreational	.53	.43	.39	.32	.33	.37	.42	1.00				
9. Katz ADL: Feeding	.39	.95	.46	.39	.32	.63	.43	.43	1.00			
10. Katz ADL: Dressing	.37	.53	.98	.75	.65	.52	.74	.37	.47	1.00		
11. Katz ADL: Toileting	.35	.45	.76	.98	.76	.41	.76	.30	.40	.77	1.00	
12. Katz ADL: Bathing	.30	.40	.69	.80	.97	.33	.69	.32	.33	.67	.79	1.00

*: $r(404)_{.95} = .10$; $r(404)_{.99} = .13$

analysis), the composite PRADLI variable and the FAST were significantly correlated ($r = -.56$, $P < 0.0001$). Thus, lower scores (suggesting more dependence and resistance) on the composite PRADLI items were associated with higher functional impairment.

The PRADLI items were significantly correlated with the ADLs as measured with the Katz et al. measuring scale. Moreover, the 4 ADLs from the Katz et al. inventory were highly associated with the corresponding PRADLI items (feeding with eating, dressing with dressing, toileting with toileting, and bathing with bathing, respectively, $P < 0.0001$; see Table 3).

A subset of this sample that consisted of 22 consecutively evaluated patients was used for the test–retest reliability portion of this study. After being trained in the administration of the PRADLI, 2 licensed doctoral-level clinical psychologists rated the 22 patients on the PRADLI items in 2 administrations that were scheduled 48 hours apart. Table 4 shows the correlations between the PRADLI items of the first administration and the second administration. The item test–retest reliability coefficients ranged from 0.83 (toileting) to 0.98 (medical compliance).

Most of the PRADLI items were moderately correlated with the scales from the NCSE. With the exception of up time, the PRADLI items were, by and large, significantly correlated with the NCSE scales. That is, higher levels of cognitive status were associated with higher levels of independence (see Table 5). The PRADLI items were also moderately correlated with the Geriatric Depression Scale. Up time was most highly correlated with the GDS ($r = -.20$, $P < 0.01$), followed by bathing ($r = -.18$, $P < 0.01$), dressing ($r = -.16$, $P < 0.01$), and restorative care ($r = -.15$, $P < 0.01$). As shown in Table 6, eating habits and medical compliance were the only PRADLI items that were not significantly correlated with the GDS. With the exception of bathing and medical compliance, the PRADLI items were also significantly associated with residents' reports of current pain intensity (see Table 6).

The PRADLI items were, by and large, significantly correlated with the number of dysfunctional behaviors exhibited by the residents. As shown in Table 7, bathing was inversely correlated with number of dysfunctional behaviors ($r = -.18$, $P < 0.01$), followed by social/recreation ($r = -.16$, $P < 0.01$), eating habits ($r = -.15$, $P < 0.01$), restorative care ($r = -.15$, $P < 0.01$), and dressing ($r = -.13$, $P < 0.01$). Up time and toileting were the only PRADLI items that were not significantly associated with number of dysfunctional behaviors.

Table 4. *Test-Retest Correlations for the PRADLI Items: Administration 1 with 2*

Item	Pearson *r*
PRADLI Up time	.88
PRADLI Eating Habits	.91
PRADLI Dressing	.91
PRADLI Toileting	.83
PRADLI Bathing	.84
PRADLI Medical Compliance	.98
PRADLI Restorative Care	.92
PRADLI Social/Recreational	.95

DISCUSSION

Our analyses revealed the PRADLI to evidence good internal consistency, test–retest reliability, and good convergent and discriminant validity. The PRADLI items were correlated with one another and with other measures as would be expected. The PRADLI items were, by and large, significantly correlated with cognitive impairment, depression, pain, functional impairment, and dysfunctional behaviors. High levels of dependence and/or noncooperation on the PRADLI were associated with higher cognitive impairment, higher depression, higher pain levels, higher functional impairment, and higher numbers of dysfunctional behaviors. The PRADLI items as a whole were highly correlated with the FAST, signifying that the 2 constructs measured by each PRADLI item (dependence and resistance) can be used as one scale of measurement.

The PRADLI appears to also have potential clinical use,

Table 5. *Correlations Between PRADLI Items and NCSE Scales*

Item	ORI**	ATT	COM	REP	NAM	CON	MEM	CAL	SIM	JUD
PRADLI: Up time*	−.07	.06	.04	−.01	−.04	−.14	−.10	.05	−.03	.02
PRADLI: Eating Habits	.36	.32	.43	.36	.39	.28	.26	.31	.30	.32
PRADLI: Dressing	.34	.22	.39	.28	.29	.28	.24	.21	.21	.28
PRADLI: Toileting	.31	.16	.31	.21	.23	.25	.20	.18	.16	.24
PRADLI: Bathing	.28	.14	.24	.17	.24	.27	.19	.17	.16	.24
PRADLI: Medical Compliance	.34	.27	.44	.37	.33	.25	.23	.27	.26	.34
PRADLI: Restorative Care	.24	.19	.33	.24	.23	.18	.17	.19	.12	.21
PRADLI: Social/Recreational	.15	.20	.23	.19	.10	.03	.11	.17	.12	.14

NCES = Neurobehavioral Cognitive Status Examination.
*: $r(404)_{.95} = .10$; $r(404)_{.99} = .13$
**ORI = Orientation; ATT = Attention; COM = Comprehension; REP = Repitition; NAM = Naming; CON = Constructions; MEM = Memory; CAL = Calculations; SIM = Similarities; JUD = Judgment

especially when used as a treatment outcome measure in LTC. Our analyses indicated that the PRADLI, as a whole, was significantly correlated with the FAST, a general assessment of functional impairment. This finding implies that the PRADLI can be used in the same manner as one would use an ordinal scale of measurement, because lower ratings on the PRADLI are associated with less functional impairment and higher numbers are associated with more functional impairment. Because most treatment objectives in LTC facilities are aimed at improving residents' functional capacity and alleviating pain and associated limitations, improvements in the PRADLI are likely to represent successful treatment outcomes. The brevity and psychometric properties of the PRADLI are also assets to the clinician working in LTC and can easily be incorporated into a monthly follow-up assessment schedule.

Some limitations were associated with this study. First, the authors assessed LTC residents that were referred to a psychologist by a physician; therefore, this sample is a convenience sample and was not randomly selected from a greater LTC population. Second, because the PRADLI is comprised of clinical rating scales, PRADLI assessment involves cooperation and assistance from LTC staff and resident caregivers. Therefore, like with any clinical rating scale, ratings can be affected (or possibly distorted) by the subjective reports of the LTC staff and caregivers. The developers of the PRADLI intentionally designed the criteria for each item to be as objective and behavioral as possible to minimize inaccuracies.

We conceptualize the PRADLI to be a measurement of functional capacity and consider it an important component of residents' quality of life. We recently incorporated the PRADLI into a path model of quality of life, in which variables hypothesized to be associated with or influence quality of life such as pain, functional capacity, cognitive functioning, behavioral dysfunction, chronic illnesses, and depression were analyzed together in a path model.[10] Our path model included chronic illness and cognitive impairment as the predictors; pain levels, behavioral dysfunction, and depression as mediators; and functional capacity (as represented by a composite PRADLI score) as the response variable. Our analyses revealed this model to have an excellent model fit. The predictor variables in the path model accounted for 35% of the collective variance in functional capacity. We conclude that cognitive, emotional, and behavioral variables interact with one another to predict patients' functional capacity.

Future research is encouraged to validate the PRADLI in other residents of LTC facilities. Our sample consisted largely

Table 6. *Correlations with PRADLI Items and Geriatric Depression Scale Items*

Item	GDS Total Score	Current Pain Intensity
PRADLI: Up time	−.20*	−.14*
PRADLI: Eating Habits	−.09	−.13*
PRADLI: Dressing	−.16*	−.11*
PRADLI: Toileting	−.13*	−.15*
PRADLI: Bathing	−.18*	−.08
PRADLI: Medical Compliance	.03	−.08
PRADLI: Restorative Care	−.15*	−.17*
PRADLI: Social/Recreational	−.12*	−.15*

*: $r(331)_{.95} = .11$; $r(331)_{.99} = .14$

Table 7. *Correlations Between PRADLI Items and Number of Dysfunctional Behaviors*

Item	Number of Behaviors
PRADLI: Up time	−.002
PRADLI: Eating Habits	−.15*
PRADLI: Dressing	−.13*
PRADLI: Toileting	−.08
PRADLI: Bathing	−.18*
PRADLI: Medical Compliance	−.12*
PRADLI: Restorative Care	−.15*
PRADLI: Social/Recreational	−.16*

ADL = activity of daily living.
*: $r(404)_{.95} = .10$; $r(404)_{.99} = .13$

of chronically ill residents, most of whom were not ambulatory, had moderate levels of dementia, and who were referred to a psychologist for an evaluation. Moreover, raters of the PRADLI must be adept at using the criteria associated with each of the rating levels of each item.[1] Because the PRADLI is a clinician-rated scale, feedback from the facility's staff, family members, and caregivers must be considered. Nevertheless, we believe this study is an important first step in understanding ADLs within the context of residents' cooperation with LTC.

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