Published in final edited form as:
J Am Geriatr Soc. 2009 June ; 57(6): 1064–1072. doi:10.1111/j.1532-5415.2009.02260.x.

Development of the Risk Appraisal Measure (RAM): A Brief Screen to Identify Risk Areas and Guide Interventions for Dementia Caregivers

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Abstract

Objectives—Family caregivers play a significant role in the health care of patients with dementia yet their needs and health status are often overlooked. This study developed and validated a brief screening measure for use in research, health care and community settings to systematically assess well-being and identify needed areas of support for caregivers of patients with dementia.

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Author Contributions: Dr. Czaja and Ms. Zhang had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Czaja, Gitlin, Burgio, Stevens, Nichols, Gallagher-Thompson, Schulz. Acquisition of the data: Czaja, Gitlin, Burgio, Stevens, Nichols, Gallagher-Thompson. Analysis and interpretation of the data: Czaja, Gitlin, Burgio, Stevens, Nichols, Gallagher-Thompson, Schulz, Zhang. Drafting of the manuscript: Czaja, Gitlin, Gallagher-Thompson, Schulz, Zhang. Revision of the manuscript for important intellectual content: Czaja, Gitlin, Burgio, Stevens, Nichols, Gallagher-Thompson, Schulz, Zhang. Statistical analyses: Zhang, Schulz. Obtaining funding: Czaja, Gitlin, Burgio, Stevens, Nichols, Gallagher-Thompson, Schulz. Technical or material support: Czaja, Gitlin, Burgio, Stevens, Nichols, Gallagher-Thompson, Schulz, Zhang.

Design—This study used data from Resources for Enhancing Alzheimer's Caregiver Health (REACH II), a multi-site, randomized, clinical trial of a behavioral intervention designed to improve the quality of life of caregivers in multiple domains. PARTICIPANTS: Two-hundred and twelve Hispanic, 211 Black/African American and 219 White family community dwelling dementia caregiver dyads providing in-home care to patients with dementia.

Measurement—Based on conceptual and psychometric analyses, a 16-item measure was developed that taps six domains linked to caregiver risk and amenable to intervention: depression, burden, self-care and health behaviors, social support, safety, and patient problem behaviors. The reliability and validity of the instrument was evaluated with 642 dementia caregiver dyads from the REACH II program.

Results—The measure was found to have acceptable internal consistency for a multi-dimensional scale and similar measurement properties for each of the racial/ethnic groups. Concurrent validity was also demonstrated for the measure.

Conclusion—The REACH Risk Appraisal Measure (RAM) developed in this study shows promise as an assessment tool that can be used in research, clinical and community settings to guide, prioritize, and target needed areas of support for caregivers of patients with dementia.

Keywords

dementia caregiver risk assessment

INTRODUCTION

Family caregivers play a pivotal role in the health and care management of patients with dementia. Although caregiving may be rewarding, providing care to a family member is stressful, contributes to psychiatric and physical morbidity, and increases the risk of mortality (1,2). These negative consequences can affect the quality of care and quality of life for the patient and increase the likelihood of institutionalization (3). Despite recognition of the caregiver's critical role, systematic assessment of the multiple needs of the caregiver is not always practiced. Most assessments focus on the patient, assess one aspect of caregiving (such as burden) or view caregiver needs in terms of capacity to provide care (4).

Systematic assessment of family caregivers can contribute to clinical practice in significant ways. Assessment can efficiently identify problems in a caregiving situation, guide development and implementation of effective care plans, and be used to evaluate program effectiveness. The assessment process itself can be therapeutic and help caregivers feel recognized and valued (5). Finally, assessment information can be used to identify new directions for research and policy.

Although understanding the needs and situations of family caregivers is valuable and necessary for developing effective patient care plans, few state or community-based service programs systematically assess caregiver needs (6). Within the clinical arena, the American Medical Association (2002) (7) published a brief caregiver self-assessment questionnaire to encourage physicians and health practitioners to recognize the needs of caregivers. While this measure is valuable for general use, it is not targeted to dementia caregivers, does not link needs of caregivers to specific interventions, nor was it developed and tested with a racially/ethnically diverse sample of caregivers. Recently, the Carers Assessment of Difficulties Index (8) was developed as a clinical tool for assessing multiple dimensions of burden in caregivers of patients with dementia. This tool may not be feasible for use in clinical settings as it is rather lengthy, and items are phrased negatively making it difficult to develop a treatment plan. Current consensus guidelines suggest that caregiver assessment should be multidimensional (reflecting areas that place caregivers at most risk), driven by a conceptual framework, be culturally relevant, and easy to administer (4).

The purpose of this study was to develop and test a brief and easy to administer measure to identify risk areas that are modifiable and amenable to intervention for families caring for patients with dementia. The measure is designed for use by clinicians and service providers to evaluate the specific needs of dementia caregivers providing care at home. It can also be used by practitioners and researchers to evaluate the impact of caregiver intervention programs. The psychometric properties of the measure were evaluated with a diverse sample of caregivers enrolled in Resources for Enhancing Caregiver Health (REACH II) program. This paper describes the development of the measure, its underlying structure, and clinical utility.

OVERVIEW OF THE REACH II PROGRAM

REACH II was a controlled randomized clinical trial of an intervention for family caregivers of patients with Alzheimer’s Disease or related disorders that was funded by the National Institute on Aging and the National Institute of Nursing Research. The intervention was designed to systematically target areas associated with caregiver risk (depression, burden, self-care and healthy behaviors, social support, and problem behaviors) (9). Five sites (Birmingham, Memphis, Miami, Palo Alto, and Philadelphia) and a Coordinating Center in Pittsburgh participated. After written informed consent and baseline assessment, dyads were randomly assigned to the intervention or information only control condition. A battery of measures was administered at baseline and the 6 month follow-up assessment. All measures were translated into Spanish for the Hispanic participants using established techniques for forward and back translation and allowing for regional variation in language expression.

Because of the variability inherent in the caregiving situation, the intervention was tailored to meet the specific needs of the caregiver on the basis of individual risk profiles obtained from a Risk Appraisal Questionnaire (RAQ) and other items included in the baseline assessment battery.

METHOD

Sample

Inclusion/Exclusion Criteria—Caregivers (CGs) were 21 years or older, living with or sharing cooking facilities with the patient, had provided care for a minimum of four hours per day for at least the past six months and reported distress associated with caregiving. Other requirements included having a telephone, planning to remain in the geographic area and keeping their relative home for at least six months, and competency in either English or Spanish (participants were queried about language fluency during telephone screening). Patients had to have a physician diagnosis of AD or dementia or a Mini-Mental State Examination (MMSE) (10) score less than 24, and have at least one limitation in activities of daily living (ADLs) (11) or two in instrumental activities of daily living (IADLs) (12).

Dyads were excluded if they were involved in another caregiver intervention study, the CG or patient had an illness or disability that would prohibit participation or the patient had an MMSE score of 0 and was bedbound (9).

Sample Characteristics—The sample included 642 Hispanic/Latino (*n* = 212), White/Caucasian (*n* = 219), or Black/African American (*n* = 211) CGs, recruited from 5 geographical areas in the U.S who ranged in age from 22 to 89 years (M = 60.6 yrs., SD = 13.3. About 20% were men; the majority of African American and Latino caregivers were adult children; for Caucasians, spouses were the majority (Table 1a and 1b). The initial assessment indicated that patients had severe cognitive deficits and substantial functional impairments (Table 1b).

DEVELOPMENT OF THE REACH II RISK APPRAISAL MEASURE (RAM)

Upon completion of REACH II, a working group consisting of REACH Investigators from each site and the Coordinating Center, and a project statistician, was formed to develop a brief and easy to administer Risk Appraisal Measure (RAM) for use by clinicians and service providers to identify dementia caregivers at risk for adverse outcomes. Based on a systematic review of existing assessment instruments; prior research that identified factors that place caregivers at risk; and data from REACH I (13,14,15,16,17,18), six target domains of risk were identified for representation in the RAM: depressive symptomatology, caregiver burden, self-care and healthy behaviors, social support, safety, and patient problem behaviors. The safety domain included safety related to the patient's impairment (e.g., driving, wandering) and the caregiver (e.g., feel like yelling at patient) as both aspects are important areas of risk for this population.

Initially, 59 items were identified from the RAQ and the REACH II baseline assessment battery that represented the six domains. From this initial pool of items, those to be included in the RAM had to meet four criteria: represent areas that placed caregivers at risk; were modifiable and amenable to intervention; had face validity; and were relevant across diverse ethnic/cultural groups.

The distributional properties of the 59 items were examined to evaluate variability in baseline responses across the three racial/ethnic groups from the REACH II sample. Items with little or no variability in response were eliminated resulting in a pool of 28 items. Next, based on clinical judgment and a process of consensus agreement in the working group, 16 items were selected that met the specified criteria and represented good indicators of each of the six target domains to form the RAM. Our strategy was to select a few key items from the baseline battery that represented each domain.

The 16-item RAM was then subjected to several statistical procedures to assess reliability and concurrent validity. Cronbach's alpha was used to assess internal consistency for the instrument for the overall sample and each race/ethnic group. Concurrent validity was assessed using Pearson's correlation coefficient. Each domain of the RAM was correlated with other measures from the REACH II battery (baseline scores) that tapped a similar construct.

Finally, distributions and summary statistics for the six domains were computed and compared for each racial/ethnic group using Chi Square Tests (Table 1a).

Test/retest reliability was not assessed because participants were enrolled in an intervention study, and therefore results before and after intervention are viewed as reflecting the intervention's impact rather than the measure's stability.

Measures Used in the Concurrent Validity Analyses

Cognitive Impairment—The MMSE (10) is an 11-item measure that evaluates cognitive function. The maximum score is 30. A score of 23 or lower (age and education corrected) indicates cognitive impairment.

Depression—The ten-item version of the Center for Epidemiological Scale Depression (CES-D) (19,20) was used to assess symptoms of depression. Scores range from 0 through

30, with higher scores indicating more depressive symptoms; a score of 8 (equivalent to 16 on the full 20 item scale) reflects depressive symptomatology (20). Cronbach's alpha=.83.

Caregiver Burden—The brief (12-item) version of the Caregiver Burden Interview (21,22) was used. Each item was rated on a five point scale (0/never to 4/nearly always), yielding a range of 0 to 48. Higher values indicate greater levels of burden. Cronbach's alpha=.85.

Self-Care—The CG's diligence in looking after his/her health was assessed using 11 items, such as getting enough rest when sick, and seeing a doctor when needed. Items were scored 0/1 (no/yes), yielding a range from 0 to 11. Higher scores indicate increased attention to one's health (9). Cronbach's alpha=.62.

Social Support—The social support measure assessed three domains: received support (3 items) (23,24); satisfaction (3 items) (24,25); and negative interactions/support (4 items) (24). Responses were scored on a 4-point scale (0/never to 3/very often). Scores could range from 0 through 30 with higher scores indicating increased social support. Cronbach's alpha=.76.

Problem Behaviors—Three questions reflecting the memory, depression, and disruption domains of the Revised Memory and Behavior Problem Checklist (RMBPC) (26)were used to assess patient problem behaviors. Responses were scored on a 5-point scale (1/substantial improvement to 5/substantial decline) yielding a range from 3 to 15, with higher scores indicating greater decline. Cronbach's alpha=.76.

Functional Impairment—Patient impairment in daily functioning was measured by a modified version of the 6 -item Katz Activities of Daily Living Scale (ADL) (11) and the 8-item Lawton and Brody Instrumental Activities of Daily Living Scale (IADL) (12). For each item a yes/no response (0/1) indicates whether the patient required help with a given activity over the past week. For both scales, higher scores indicate greater impairment (IADL 0–8; ADL 0–6). Cronbach's alpha=.81 (ADL) and.76 (IADL).

Positive Aspects of Caregiving—Positive aspects of caregiving was measured using 9 items that assessed caregivers' subjectively perceived gains from desirable aspects of, or positive affective returns from providing care (1/disagree a lot to 5/agree a lot) (27). Scores could range from 0–36; higher scores indicate more positive feelings about caregiving. Cronbach's alpha=.91.

Quality of Care—Quality of care was measured by 40 items in three domains: living environment (14 items), caregiving frustrations (8 items) and exemplary caregiving (18 items) (9). The living environment assessed both positive aspects of the environment (5 items) and environmental hazards (9 items) with scores ranging from 0–14; higher scores indicate superior living conditions (Cronbach's alpha=.46). Frustration scores range from 0–24 with higher scores indicating increased frustration (Cronbach's alpha=.74). Exemplary caregiving scores range from 0–54 with higher scores indicating increased exemplary caregiving (Cronbach's alpha=.83).

RESULTS

Description of RAM

The 16-item RAM taps six domains related to caregiver risk which are amenable to intervention. Table 2 describes the six domains and suggested intervention strategies for each domain. Depressive symptomatology is assessed by having the CG rate the degree to which he/she felt depressed in the last week (1 item). Burden is assessed by having CGs rate the stress associated with caregiving responsibilities and the degree to which they feel good as a result of caregiving (3 items). Self-care and healthy behaviors is assessed by asking CGs about their own health or problems with sleep (2 items). Social support is assessed by having the CG rate his/her satisfaction with support from others (2 items). Patient problem behaviors is assessed by asking the caregiver if he/she has information about Alzheimer's disease and the degree to which difficulties are experienced helping the patient with basic activities (2 items). Two dimensions of safety are assessed: risk associated with caregiver behaviors (2 items, e.g., felt like yelling at the patient) and risk associated with patient impairment (4 items, e.g., patient drives). For the safety, depression, self-care and healthy behaviors, burden, and patient problem behaviors domains, a higher score indicates higher risk. For the social support domain, a lower score indicates less satisfaction with support and higher risk.

Internal Consistency and Concurrent Validity—Cronbach's alpha was.65 for the entire scale for the overall sample, which although relatively low, was expected as the scale measures six distinct domains. Cronbach's alpha was similar for each of the racial/ethnic groups:.69 for Hispanic/Latino,.65 for White/Caucasian, and.65 for Black/African American.

The correlation analysis indicated that each of the 6 domains was significantly related to at least one of the selected concurrent validity measures. For example, the depression domain was significantly correlated with the CES-D, the Burden Interview and the bother score of the RMBPC. The burden domain was correlated with the Burden Interview and the Positive Aspects of Caregiving scale. The burden domain taps both dimensions. All relationships were in the hypothesized direction (Table 3).

Subgroup Analyses—Significant differences were found for the safety, burden and depression domains across the racial/ethnic groups (Table 1a). Hispanic caregivers were at slightly higher risk for depression than the other caregivers. Black and Hispanic caregivers reported less burden than White caregivers and White caregivers reported more problems with safety issues (ps < .05). There were no significant differences among the caregivers for the self-care and healthy behaviors, social support, or patient problem behaviors domains.

Given that there were racial/ethnic differences in income and education (Table 1a) we further examined the differences in the safety, burden and depression domains using stratification analysis with income and education as strata. Within each strata we examined race/ethnic differences in outcomes using the Mann Whitney U test given the distributional properties of the data. The results for safety were unchanged; White caregivers reported more problems with safety than other caregiver groups, suggesting that income and education are not the source of these differences. With respect to burden, Black caregivers reported significantly less burden than White caregivers; however, the difference between Hispanic and White caregivers for burden was not significant. This suggests that the difference in burden between these two race/ethnic groups may be driven by differences in income and education. Finally, for the depression domain, the only remaining difference was between Hispanic and Black caregivers where Hispanic caregivers reported higher depression scores.

CONCLUSIONS AND RECOMMENDATIONS FOR CLINICAL PRACTICE

Family caregivers play a significant role in the long-term care of dementia patients. Although providing care can be rewarding, it often places caregivers at great risk for negative outcomes that also compromise the well-being of dementia patients and heighten their risk for placement in institutional settings. In most clinical and service settings, caregiver needs are overlooked and systematic assessment is restricted to the patient, especially among racial/ethnic minorities (5). Given that the success of most care plans rests largely on the caregiver, effective care outcomes depend on understanding the needs and risks of both the caregiver and patient.

The Risk Appraisal Measure (RAM) developed and tested in this study has promise for identifying specific areas of caregiver risk for which appropriate interventions can be provided either directly or through a referral process. For example, the RAM can be used in primary care/geriatric physician offices, geriatric care assessment centers, or community agencies, such as the Alzheimer's Association, that provide support to AD caregivers. It could also be a useful assessment tool for home health care providers. In the span of 5 7 minutes, key areas of potential risk can be identified, and a targeted treatment plan can be developed so that caregivers can quickly and efficiently receive the help they need (see Table 2). A strength of the RAM is that it taps multiple dimensions that have known links to caregiver risk and adverse outcomes in 6 areas: depression, burden, self-care and healthy behaviors, social support, safety, and patient problem behaviors. As shown in REACH II (9), evidenced-based strategies exist to improve caregiver outcomes within each of these areas. In fact, each risk area maps onto an evidence-based intervention program (28,29).

For example, if a caregiver reports frequent problems with depression, this may signal a need for referral for further evaluation to determine the severity of the problem and if services from a trained mental health professional are warranted. If caregivers only occasionally experience problems with depression, the intervention might involve instruction on strategies to increase involvement in everyday pleasant events. Caregivers who report being "burdened" can be referred to a support group or taught stress management techniques. If a caregiver indicates problems with self care, a wide range of strategies such as helping the caregiver obtain respite to attend medical appointments or other medically-based interventions could be initiated. Interventions to help caregivers deal with health issues are different from interventions to address depression or lack of social support. Effective caregiver treatment plans cannot be algorithmic and rest solely on the basis of the RAM but require more in-depth probing once a problem area is identified.

The data also indicate that the RAM has similar measurement properties across ethnic and racial groups. This is important given the increasing number of minority caregivers and recent findings that intervention needs vary among racial/ethnic groups due to differences in attitudes, patterns of caregiving, levels of support, coping strategies, and distress (30).

In sum, the RAM is an efficient and easily administered tool that can provide a "road map" for intervention, and increase the likelihood that a caregiver will receive the specific forms of assistance needed to effectively maintain the caregiving role. From a public health perspective, early identification and intervention for caregivers at risk may prevent or delay costly institutional placement and conserve long-term care resources. The RAM can also be used as an outcome to assess the effectiveness of intervention or treatment strategies.

A limitation of the RAM is that it does not assess other domains such as financial strain or social activities that can also be sources of stress for caregivers (5). We selected areas for inclusion that are most often highlighted in the caregiving literature as placing a caregiver at risk for adverse outcomes or impacting the dementia patient and for which evidence-based interventions are available (9). Future studies are needed to examine the reliability and validity of the RAM with other ethnic groups and to evaluate the effect of the caregiver risk assessment on caregiver and patient quality of life. Studies are also needed to further identify links between risk domains and effective intervention programs.

Acknowledgments

Conflict of Interest: This study was supported through the REACH project, funded by grants from the National Institute on Aging and the National Institute of Nursing Research (UO1 -AG13305, AG13289, AG13313, AG20277, AG13265, NR004261).

Sponsor's Role: No sponsors were involved in the design and conduct of the study, collection, management, analysis and interpretation of the data, or preparation of the manuscript.

Funding Sources: This study was supported through the REACH project, funded by grants from the National Institute on Aging and the National Institute of Nursing Research (UO1 -AG13305, AG13289, AG13313, AG20277, AG13265, NR004261).

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Table 1

Table 1a. Caregiver Characteristics by Race/Ethnicity

	Hispanic **n %**	**White/Caucasian** **n %**	**Black/African American** **n %**	***p*-value**
Age (yrs)				-
N	212	219	211	
Mean (SD)	58.8 (13.9)	63.8 (12.3)	59.0 (13.2)	
Median (Range)	60.1 (22 – 84)	63.9 (38 – 87)	58.5 (24 – 89)	
Sex				-
N	212	219	211	
Male	38 (17.9)	38 (17.4	34 (16.1)	
Education[a]				-
N	212	219	211	
< High school	85 (40.1)	18 (8.2)	23 (10.9)	
High school	43 (20.3)	38 (17.4)	64 (30.3)	
> High school	84 (39.6)	163 (74.4)	124 (58.8)	
Marital Status				-
N	212	219	211	
Married	135 (63.7)	175 (79.9)	118 (55.9)	
Not married	77 (36.3)	44 (20.1)	93 (44.1)	
CG relationship to Patient				-
N	212	219	211	
Spouse	83 (39.2)	126 (57.5)	63 (29.9)	
Non-spouse	129 (60.8)	93 (42.5)	148 (70.1)	
Child	109 (84.5)	85 (91.4)	113 (76.4)	
Sibling	9 (7.0)	2 (2.2)	7 (4.7)	
Other	11 (8.5)	6 (6.5)	28 (18.9)	
CG income[b]				-
N	212	219	211	
Less than $20,000	113 (55.7)	32 (15.3)	77 (38.5)	
$20,000 – $39,999	56 (27.6)	65 (31.1)	67 (33.5)	
$40,000 and above	34 (16.7)	112 (53.6)	56 (28.0)	
Years living with Patient				-
N	212	219	211	
Mean (SD)	23.0 (20.8)	26.4 (22.1)	17.3 (19.9)	
Median (Range)	15 (0 – 70)	23.0 (0 – 67)	6.0 (0 – 67)	
Time doing things (hours)				
N	212	219	211	
Mean (SD)	9.7 (4.9)	7.5 (4.9)	8.5 (5.0)	
Median (Range)	9.0 (2–24)	6.0 (1– 21)	8.0 (1 – 24)	
Time on duty (hours)				
N	212	219	211	

Table 1a. Caregiver Characteristics by Race/Ethnicity

	Hispanic	**White/Caucasian**	**Black/African American**	***p*-value**
	n %	**n %**	**n %**	
Mean (SD)	19.9 (6.3)	19.4 (6.9)	18.4 (7.3)	
Median (Range)	24.0 (1 – 24)	24.0 (0 – 24)	24.0 (0 – 24)	
Employed				-
N	212	219	211	
Full or Part time	65 (30.7)	63 (28.8)	77 (36.5)	
Retired	61 (28.8)	99 (45.2)	77 (36.5)	
Unemployed	86 (40.6)	57 (26.0)	57 (27.0)	
RA Domains[c]				
Safety				.000[d]
N	210	219	211	
Mean (SD)	2.1(1.7)	3.2(1.7)	2.8(1.5)	
Median	2.0	3.0	3.0	
25%, 75%	1, 3	2, 4	2, 4	
Min, Max	0, 7	0, 9	0, 8	
Note: Range from 0 to 13.				
Sub-domain of safety (1)- Safety risk related to patient impairment				.000[c]
N	210	219	211	
Mean (SD)	1.1(1.1)	1.9(1.2)	1.5(1.1)	
Median	1.0	2.0	1.0	
25%, 75%	0, 2	1, 3	1, 2	
Min, Max	0, 4	0, 5	0, 6	
Note: Range from 0 to 7				
Sub-domain of safety (2)- Safety risk related to the home environment				.001[c]
N	212	219	211	
Mean (SD)	1(1.0)	1.4(1.1)	1.3(1)	
Median	1.0	1.0	1.0	
25%, 75%	0, 1	1, 2	1, 2	
Min, Max	0, 5	0, 6	0, 4	
Note: Range from 0 to 6				
Depression				.002[c]
N	212	219	210	
Mean (SD)	1.3(1.1)	1.1(1.0)	1(1.0)	
Median	1.0	1.0	1.0	
25%, 75%	0, 2	0, 2	0, 2	
Min, Max	0, 3	0, 3	0, 3	
Note: Range from 0 to 3				
Burden				.002[d]
N	212	219	211	

Table 1a. Caregiver Characteristics by Race/Ethnicity

	Hispanic n %	White/Caucasian n %	Black/African American n %	*p*-value
Mean (SD)	4.4(2.7)	5(2.6)	4(2.2)	
Median	4.0	5.0	4.0	
25%, 75%	2, 6	3, 7	2, 5	
Min, Max	0, 12	0, 12	0, 11	
Note: Range from 0 to 12				
Self-care and healthy				.10[c]
N	212	219	211	
Mean (SD)	3.4(1.5)	2.9(1.4)	3.1(1.2)	
Median	4.0	3.0	3.0	
25%, 75%	2, 5	2, 4	2, 4	
Min, Max	0, 6	0, 6	0, 6	
Note: Range from 0 to 6				
Social Support				.23[c]
N	209	216	210	
Mean (SD)	3.3(2.0)	3.7(1.9)	3.5(1.9)	
Median	3.0	4.0	4.0	
25%, 75%	2, 5	2, 6	2, 5	
Min, Max	0, 6	0, 6	0, 6	
Note: Range from 0 to 6				
Patient Problem Behaviors				.77[c]
N	210	218	211	
Mean (SD)	0.9(0.8)	0.7(0.8)	0.9(0.8)	
Median	1.0	1.0	1.0	
25%, 75%	0, 1	0, 1	0, 1	
Min, Max	0, 3	0, 3	0, 3	
Note: Range from 0 to 3				

Table 1b. Patient Characteristics by Race/Ethnicity

	Hispanic (n=212) n %	White/Caucasian (n=219) n %	Black/African American (n=211) n %
Age (years)			
Mean (SD)	78.2 (9.5)	78.9 (8.9)	80.3 (8.7)
Median (Range)	79.2 (52 – 100)	79.8 (47 – 99)	81.2 (51 – 98)
Sex			
Male	77 (36.3)	114 (52.1)	78 (37.0)
Education			
< High school	147 (72.4)	56 (25.8)	111 (55.8)
High school	25 (12.3)	57 (26.3)	36 (18.1)
> High school	31 (15.3)	104 (47.9)	52 (26.1)
ADL limitations – range (0–6)			

Table 1b. Patient Characteristics by Race/Ethnicity

	Hispanic (n=212)	White/Caucasian (n=219)	Black/African American (n=211)
	n %	n %	n %
Mean (SD)	3.5 (2.1)	3.3 (2.1)	3.4 (2.0)
Median (Range)	4.0 (0 – 6)	3.0 (0 – 6)	4.0 (0 – 6)
IADL Limitations range (0–8)			
Mean (SD)	6.8 (1.8)	6.9 (1.8)	6.8 (1.6)
Median (Range)	8.0 (0 – 8)	8.0 (1 – 8)	7.0 (1 – 8)
Mini-Mental Status Exam – range (0–30)			
Mean (SD)	11.4 (7.0)	14.4 (7.5)	11.5 (7.2)
Median (Range)	11.0 (0 – 27)	15.0 (0 – 29)	12.0 (0 – 26)

[a] Using Mann-Whitney test. Hispanic < Black/African American < White/Caucasian. p < .001

[b] Using Mann-Whitney test. Hispanic < Black/African American < White/Caucasian. p < .001

[c] from Jonckheere-Terpstra test

[d] from Kruskal-Wallis test

Table 2

Overview of the Resources for Enhancing Alzheimer's Caregiver Health II (REACH II) 16-item Risk Appraisal Measure (RAM)[a]

Domain	Definition of Domain	RAM items	Example of Treatment Strategies
Self-Care and Healthy Behaviors	Caregiver's physical well-being and self-care behaviors.	• Caregiver has trouble sleeping • Caregiver's rating of physical health	• Provide educational materials on self-care; Provide instruction on healthy- behaviors; Referral to appropriate medical resources (e.g., nutritionists).
Patient Problem Behaviors	Difficulties in the management of patient ADL/IADL and behavioral problems.	• Caregiver has information on symptoms of dementia • Caregiver feels stress when trying to help patient with daily activities	• Provide educational materials on dementia and managing problem behaviors; Engage in problem solving exercises; Provide a written prescription of strategies to manage behaviors.
Burden	Feeling stressed due to caregiving responsibilities Feels good as a result of caregiving	• CG feels stress trying to meet other responsibilities • CG feels strain around patient • Caregiver feels good as a result of caregiving	• Provide educational materials on stress and stress management techniques; management techniques (e.g., breathing exercises, stretching).
Depression	Feeling depressed or sad.	• Caregiver felt depressed in the last week	• Provide information and instruction on strategies for engaging in pleasant events and mood management; referral to appropriate healthcare specialist (e.g., counselor).
Social Support	Satisfaction with support from friends or family	• Satisfaction with help from friends • Satisfaction with support from others	• Provide information on community resources; Provide education about the importance of social support and communication skills; Referral to a support group.
Safety	Being at risk due to caregiver's behavior Being at risk as a result of patient impairment	• Feel like yelling at CR • Refrain from hitting Cr • Dangerous objects are in the home • Patient wanders • Patient drives • Able to leave patient alone	• Provide education and instruction on stress and anger management techniques; • Remove dangerous objects from home; Enroll patient in"Safe Return" program of the Alzheimer's Association; File report with local DMV office.

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[a] The RAM is available from the authors

Table 3

Pearson's Correlation Coefficient to Measure the Association of Domains from RAM and Proposed Validity Indicators

Validity indicators Domains	CG Ed.	Yrs of CG with Patient	Safety[i]	Positives aspects of environ[j]	MMSE[k]	Exemplary CG[l]	Patient safety risks[m]	Social support[n]
Safety[a]	0.22**	0.04	0.67**	−0.06	0.22**	−0.32**	0.17**	0.00
Safety risk related patient impairment to[b]	0.21**	0.07	0.77**	−0.12*	0.33**	−0.17**	0.10*	0.07
Safety risk related to CG behavior[c]	0.13*	−0.01	0.22**	0.05	−0.01	−0.32**	0.17**	−0.08
Depression[d]	−0.05	0.09	0.08	0.00	0.01	−0.12*	0.12*	−0.27**
Burden[e]	0.22**	−0.07	0.20**	0.06	0.07	−0.29**	0.12*	−0.31**
Self care and healthy[f]	−0.16**	0.04	−0.02	0.05	0.00	−0.09	0.07	−0.24**
Social support[g]	0.00	0.09	0.03	0.00	0.05	0.16**	−0.08	0.68**
Problem Behaviors[h]	−0.06	−0.08	−0.02	0.05	−0.11*	−0.15**	0.12*	−0.09

Validity indicators Domains	Self-care[o]	CES-D[p]	CG frustration[q]	Burden interview	Unconditional bother	[s] ADL/IADL	[t] Positive aspect of CG[u]
Safety[a]	−0.03	0.18**	0.55**	0.33**	0.36**	−0.21**	−0.30**
Safety risk related to patient impairment[b]	0.07	0.03	0.20**	0.14**	0.18**	−0.36**	−0.22**
Safety risk related to CG behavior[c]	−0.13*	0.25**	0.67**	0.38**	0.38**	0.06	−0.25**
Depression[d]	−0.25**	0.68**	0.24**	0.45**	0.30**	0.02	−0.21**
Burden[e]	−0.28**	0.51**	0.31**	0.79**	0.44**	0.01	−0.58**
Self care and healthy[f]	−0.27**	0.49**	0.12*	0.35**	0.22**	0.07	−0.07
Social support[g]	0.21**	−0.32**	−0.10*	−0.29**	−0.10	−0.01	0.16**
Problem Behaviors[h]	−0.21**	0.16**	0.19**	0.27**	0.20**	0.17**	−0.05

[*] Note 0.001 p < 0.01;

[**] p <0.001

[a] The higher score indicates the higher risk in safety

[b] The higher score indicates the higher risk related to CR impairment

[c] The higher score indicates the higher risk from CG behavior

[d] The higher score indicates worse depression.

[e] The higher score indicates more burden.

[f] The higher score indicates poorer self care and health.

[g] The higher score indicates greater social support.

[h] The higher score indicates greater problem behaviors.

[i] The higher score indicates greater risk related to safety.

[j] The higher score indicates more positive aspects of environment in quality of care.

[k] The higher score indicates better cognitive function of patient.

[l] The higher score indicates better exemplary caregiving.

[m] The higher score indicates more danger of CR in behavior.

[n] The higher score indicates higher social support.

[o] The higher score indicates the better caregiver self care.

[p] The higher score indicates the more depressive symptoms.

[q] The higher score indicates the more caregiver frustration.

[r] The higher score indicates the more burden.

[s] The higher score indicates the more bother with caregiving duties.

[t] The higher score indicates greater patient impairment.

[u] The higher score indicates more positive aspect of caregiving.