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An updated measure for investigating basic knowledge of Alzheimer's disease in underserved rural settings

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Rural, underserved older residents face an increased risk of Alzheimer's disease (AD) as compared to communities with younger populations, greater access to services, and higher income and education levels (Mattos, Snitz, & Lingler, 2017; Prince, Bryce, Albenese, et al., 2013). A greater percentage of older adults (21.3%) live in rural settings (16.4%). The likelihood of developing AD increases dramatically with age; 17% of persons age 75–84 and 32% of persons age 85 and older develop AD (Hebert, Weuve, Scherr, & Evans, 2013). Disparities of lower socioeconomic status, education, and lower healthcare access propagate higher rates of cardiovascular disease, hypertension, smoking, obesity, and diabetes that are more prevalent in rural settings (Koller & Bynum, 2014). These health behaviors are associated with greater AD incidence (Borak, Salipante-Zaidel, Slade, & Fields 2013; Sherzai, Sherzai, Liu, et al., 2016). Unfortunately, rates of dementia detection are lower in rural populations (Mattos, et al., 2017), due to these health inequities (authors, 2014).

Cultural perceptions about aging can add to the inequality in AD recognition and treatment (Koller & Bynum, 2014). Rural cultures have long been viewed as an ethnic subculture, with similar values, beliefs, and knowledge levels that impact their lifestyle, health beliefs, and

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care seeking behavior (Long and Weinert, 1989). Researchers have found that understanding about AD regarding dementia varies across underserved populations (authors, 2011) and that more research is needed, including those in rural settings (Kelly, Ferketich, Ruffin, Mack, Tatum, and Paskett, 2012; Mattos, Snitz, Lingler, et al., 2017).

The Alzheimer's Disease Facts and Figures Report (2018) and Department of Health and Human Services (2014) have cited the benefits of early detection. The 400% increase in Medicaid/Medicare and out-of-pocket spending for Alzheimer's disease care of \$259 billion in 2017 (Alzheimer's Association, 2018) highlights the need for preventive care, especially among higher-risk underserved rural groups. It is important to provide culturally effective AD education to correct misconceptions, decrease stigma, and bring awareness of the need for routine cognitive screening among populations at risk (authors 2018).

The initial step in developing educational interventions to increase AD awareness is to assess current levels of AD knowledge. The available measures described in the following literature review were limiting because they were designed and tested among healthcare professionals, students, caregivers, and those with higher socioeconomic and educational backgrounds than is often prevalent in underserved settings. A new measure designed to assess knowledge in underserved populations, the Basic Knowledge of Alzheimer's Disease Survey (BKAD) was piloted in two phases among 640 participants in rural Appalachia (authors, 2017). This original BKAD was based on the Alzheimer's Association Ten Warning Signs (Alzheimer's Association, 2016), Content Validity Index using Cohen's Kappa (k) statistic (Landis & Koch, 1977) review of other knowledge scales, cognitive interviews, and expert input. Five domains of risk, prevention, detection, treatment (three items each) and symptoms (eight items) were addressed. Results from Rasch (1980) modeling and tests for construct, content, and discriminate validity between persons with high and low levels of education were favorable. However, item analysis conducted for the first pilot study revealed that point biserial, difficulty, and discrimination indices for six items, all symptom questions, fell below the threshold of acceptability of approximately $p = .20$ (authors, 2017), as they were not challenging enough for the participants. Therefore six items were replaced (See Table 3) with items addressing new content from the new guidelines for annual cognitive screening as part of the Medicare/Medicaid annual wellness visit, and the new research regarding preventive lifestyle and heightened AD risk noted earlier in this article. We also included two items from the 10 Warning Signs of AD (Alzheimer's Association, 2016) that were not in the previous version (depression and vision changes). See Table 3 for the items deleted and added to the scale.

The purpose of this article was to 1) describe the Basic Knowledge of Alzheimer's Disease (BKAD) (revised) survey, and 2) analyze gaps in AD knowledge in two diverse rural settings by examining five different communities.

Literature Review of Related Measures

Alzheimer's disease knowledge scales have evolved since Dieckmann, et al.'s (1988) and Steckenrider's (1998) sentinel research on the public's knowledge about Alzheimer's disease. Steckenrider designed the seventeen-item Alzheimer's Disease Assessment Test

(ADAT) to investigate AD symptoms, etiology, and misconceptions. Various measures followed (Ayalon and Areán, 2004; Blay, Furtado, & Peluso, 2008; Connell, Roberts & McLaughlin, 2007; Roberts & Connell, 2000; & Werner, 2004), but are now obsolete due to new research, or were tested in urban settings with individuals having caregiving experience or a higher income base (authors, 2017).

Carpenter and colleagues (2009, 2011) developed the Alzheimer's Disease Knowledge Scale (ADKS), for use among health providers, students, and experienced caregivers (Nordhus, Sivertsen, & Pallesen, 2012; Smyth, Fielding, Beattie, et al., 2013; Sullivan & Mullan, 2017). Although the ADKS is well known, Carpenter and colleagues noted the need for a culturally relevant survey that is written at a lower difficulty and health literacy level (2009).

In 2010, Jang, Kim, and Chiriboga created the ten-item Knowledge of Alzheimer's Disease scale (KAD) for use in their target population of Korean Americans. The KAD included questions from previous AD knowledge tests. Reliability and validity were not reported. However, new information based in recent AD research that is important for the public to know is not available in the KAD, such as the relationship between diabetes or cardiovascular disease and AD risk (Mayeda, Glymour, Quesenberry, Whitmer, 2016; Mehta & Yao, 2017; Snyder, Corriveau, Craft, et al., 2015).

Anneer and colleagues' (2017) recent development of the Dementia Knowledge Assessment Scale (DKAS) included nursing students, physicians, carers, and general public enrolled in the *Understanding Dementia Massive Open Online Course*. The authors demonstrated strong reliability and validity in the third trial ($n = 3,649$) of the refined 25-item test; ($\alpha = .85$), with acceptable subscale internal consistency ($\alpha = .65$). Confirmatory factor analysis revealed four domains of causes and characteristics, 2) communication and behavior, 3) care considerations, and 4) risks and health promotion. Unfortunately, the DKAS is not a good fit for rural underserved populations. Participants in the Australian-based Anneer study completed the measure by accessing a course online, an option which is not feasible to many older underserved rural residents, either due to lack of access or internet competence, referred to as digital literacy (Adeyemon, 2009). The measure could be administered as a paper/pencil test to circumvent that barrier. However, readability statistics were not reported and multisyllabic terms and lengthy items may be a barrier. This concern is reflected in test questions with difficult verbiage such as "experiencing", "environment", "uncharacteristic" in the lengthy statements "A person experiencing advanced dementia will not generally respond to changes in their physical environment" (16 words) and "Uncharacteristic behaviours in a person experiencing dementia are generally a response to unmet needs" (15 words).

In summary, the need for a measure of AD knowledge to match the socioeconomic, educational, and cultural needs of the population remained unmet. Recently, AD researchers cited the need for further study with more representative samples of rural underserved adults to identify disparities in cognitive health outcomes (Mattos, et al., 2017). Increasing AD understanding and knowledge about the benefits of early dementia detection among the underserved is an important step in this endeavor.

Method

The revised Basic Knowledge of Alzheimer's Disease (BKAD), sociodemographic data, and health literacy (REALM-SF) measures were administered to a convenience sample of rural older adults from diverse rural settings. Statistical analyses included reliability and validity testing using Cronbach's alpha (1951) and Rasch modeling (1980), and test-retest for stability. Pearson's correlation coefficient was applied to investigate relationships between sociodemographic variables, BKAD total scores, and constructs. Differences between the two cohorts (Appalachia and Florida Glades) were examined using independent sample t-tests.

Setting and Sample

Participants ($n = 228$, including 98 from Appalachia and 130 from southcentral FL) were recruited through known contacts at senior centers and subsidized housing units from five communities in two rural settings. The characteristics of these communities are listed in Table 1 (U.S. Census Bureau, 2015). Staff posted flyers three weeks prior to the study. Flyers included statements about inclusion requirements and that gift cards were available. Potential participants came to the senior center or activity room the day of data collection.

Prior to consent, the investigator explained the purpose of the study, the voluntary participation and ability to withdraw from the study at any time, and the confidentiality of data. The researcher protected confidentiality by using codes rather than names on the survey tool. Rural for this study was defined as all population or clusters not within an urbanized area (U.S. Census Bureau, 2015), specifically; southcentral rural Florida in an area known as "the Glades", and Appalachian Virginia, West Virginia, Alabama, and North Carolina. Overall, recruitment rates among eligible attendees at each site ranged from 50–80%. These settings were chosen to include rural communities with different ethnic backgrounds. Cultures varied by ethnicity/race and livelihood: The Glades, FL region has a higher concentration of ethnically diverse residents, including various Hispanic ethnicities; Mexican, Puerto Rican, South and Central American. Agriculture is the primary means of employment in the Glades and in Rockingham County, NC. Manufacturing and construction are the largest industries in Limestone County, AL. Sales and extraction (mining) companies are the major employers in Lynchburg, VA and Nicholas County, WV, respectively. Approximately 10% of this sample ($n = 20$) participated in the test-retest exercise.

Inclusion Criteria

Participant eligibility requirements included residing in either of the two target rural areas (southcentral Florida or southern Appalachia) at least five years, English-speaking, age 55 or older, and had not been previously diagnosed with dementia or depression.

Exclusion Criteria

Visiting family members or friends, persons previously diagnosed with a dementia-related illness, or persons under 55 did not qualify for this program of research. Persons ($n = 32$)

who achieved a score below 4 on Borson's Mini-Cog™ (2016) were not included in the study, and were referred immediately to their provider for further assessment.

Data analysis

Building on the pilot study's previous findings (authors 2017), this current study included Cronbach's (1951), Rasch modeling (1980), and item-to-total correlation analyses to evaluate the estimated reliability of the revised BKAD. Stability was examined using test-retest. Mean and standard deviations of each item were calculated after summing correct responses to evaluate potential knowledge gaps, conduct Pearson's r correlations, and compare the two collection settings using independent sample t -tests.

Instruments

Borson's (2016) Mini-Cog™ was administered to evaluate participants for risk of cognitive impairment. Patients scoring below a 4 were referred to their local provider or clinic for further follow-up. The Rapid Estimate of Adult Health Literacy in Medicine, Short Form (REALM-SF) (Arozullah, et al., 2007) health literacy scale, and the revised BKAD were used for quantitative data collection.

Sociodemographics.—Data were collected by self-report, including the participants' age, years of education, health literacy, years lived in a rural area, gender, past occupation, birthplace, marital status, ethnicity, religion, experience with Alzheimer's disease, and history of past memory screening.

The Mini-Cog™.—The Mini-Cog (Borson et al.; 2000, 2013, 2016) consists of a clock drawing test and three-item memory recall to evaluate the need for an in-depth cognitive assessment. One point is awarded for each word recalled (maximum of three). One point is given for the correct drawing of the clock face (numbers 1–12 ordered and positioned appropriately), and one point for correct placement of the hands to indicate the time of 11:10.

REALM-SF.—This test to measure health literacy in a shortened version has shown strong reliability (Cronbach's $\alpha = .91$) in multiple diverse settings and strong correlation ($r = .94$) with the REALM-R (Imoisili, Levinsohn, Pan, et al., 2017). Health literacy is evaluated as adequate (9th grade), marginal (7th–8th grade), or low (6th grade), based on the number of seven specific words (menopause, antibiotics, exercise, jaundice, rectal, anemia, and behavior) that they recognize and can read aloud. For example, if the subject is only able to read the words “exercise” and “menopause”, a score of two would be assigned. This score places the subject in the category of “fourth to sixth grade; unable to read prescription labels; will need low-literacy materials (Arozullah, et al., 2007).

BKAD.—The revised BKAD measure is 32 items. The rationale for the six items that were changed from the previous was described earlier in the background section. See Table 2 for the items deleted and added to the scale.

This version was piloted with attendees of rural senior centers and subsidized housing units from five different states in two regions; southern Appalachia and Florida. Items were scored as one point for each correct answer and zero points for each incorrect answer. Nine items: 3, 9, 10, 12, 16, 17, 22, 24, and 27 were correct if answered “false” and therefore received 1 point. For the remainder, the correct answer was “true.” The health literacy level for the revised BKAD is .4 on the Flesch-Kincaid (1976) reading level, indicating a sixth grade level of reading.

Results

To administer the revised BKAD, the sample was derived from rural communities in AL, FL, NC, VA, and WV ($n = 228$). Combined, the average participant in the public sample was 73 years of age ($SD = 8.36$), had lived in a rural area 53.1 years ($SD = 26.89$), received 12.85 years of formal education ($SD = 2.85$), and demonstrated a health literacy score of 5.98 ($SD = 1.66$). Most (86%) of the sample saw a current health care provider, had never been an AD caregiver (79%), were married or widowed (71.8%), non-Hispanic White (71%), and female (68%) (Table 3A and 3B).

Important sociodemographic findings include that almost all Florida Glades residents (99%) wanted to participate in memory screening, as compared to Appalachian participants (62%). Slightly more FL residents saw providers routinely (94%) as compared to Appalachians (88%) yet about the same number (22 and 25%) reported previous memory screening by a provider.

Next, independent sample t-tests were used to compare sociodemographic characteristics across the two collection settings of Appalachia and Glades, FL (Table 4). Of interest is that Appalachian residents had higher average years of education (12.8; $SD = 2.9$) and health literacy (6.0; $SD = 1.6$), as compared to the Florida Glades residents: 9.4 ($SD = 7$) and 3.2 ($SD = 2.9$) respectively.

Reliability and Stability

Cronbach’s alpha was .85 and Rasch item reliability was .94 in this overall rural sample. Item-to-total correlations were used to also examine reliability. Dropping any test items would not have improved the reliability.

The test-retest FL group was recruited from a subsidized living facility ($n = 20$) due to the convenience in access. The BKAD was administered to the same attendees three weeks apart. There was no significant difference [$t(-.87) = 17$, $p = -.33$] between the mean scores at time one (13.4; $SD = 3.05$) and time two 14.04 ($SD = 2.97$). The retest score in the Appalachian group in the original BKAD study showed no significant difference between Time 1 and Time 2 (authors, 2017).

Predictive Validity

The extent to which a test score forecasts outcomes based on criterion measures (Cronbach & Meehl, 1955; Field, 2013) is known as predictive validity. For example, only 66% of the FL cohort graduated high school, and only 20% attended school beyond 8th grade, so it was

expected that years of formal education would have an impact on the BKAD score. As seen in Table 5, as expected, more years of formal education was associated with higher health literacy. Older participants had fewer years of formal education.

Gaps in AD Knowledge in Rural Populations

There was no significant difference in BKAD total scores between the Glades (25.01; $SD = 9.5$) and Appalachian (24.6; $SD = 5.6$) cohorts. Examining knowledge gaps by constructs (subscales) revealed that those with higher education and BKAD scores (Table 6) overall were more aware of risk factors, symptoms, and treatment than they were of treatment and detection (Table 6).

In examining knowledge gaps between the two groups, Appalachian and Florida Glades, (Table 7), there were no significant differences. Only item #16; “Being screened for memory problems can take as little as five minutes” was more than 4 percentage points different in correct answers between the two groups, but both groups scored high (90% and 85% respectively).

Overall, 90% of all participants believed that “The sooner you get help for AD, the better chance you have for slowing it down.” About 80% knew that staying physically, socially, and mentally active may help to delay AD onset. In contrast, the lowest scores were in regards to personal disease risk: “Nothing can be done to reduce the risk of AD” (less than 70% answered correctly), and “Persons with a history of diabetes, high blood pressure, or stroke are at greater risk of AD” (61% correct). Another low scoring question (approximately one-third answered incorrectly) was related to the new finding that sudden vision changes may indicate AD risk. Other knowledge gaps were related to symptoms, including “Persons with AD could remember things if they just tried harder (77% correct in the Glades group), “People with AD always go through a violent stage” (64% Glades and 71% Appalachia groups), and in both groups @ 70% correct: “Persons with AD have less stress than other people”/“Persons with AD have less pain than other people” (Table 5).

Discussion

Improved screening rates in rural populations as a result of increased awareness and understanding of disease risk are well documented in the literature (Camacho, Hwang, Kern, & Anderson, 2015; Della, King, & Ha, 2013; Galvin, 2009; Hatcher, et al; 2011; Johnson, Denham, and Denham, 2015; Ramirez, et al., 2015; Schoenberg, Howell, & Fields, 2012; Vanderpool, Huang, & Shelton, 2012). Determining knowledge gaps in varied populations and settings is essential to designing effective educational programs. This study’s results confirmed the positive fit, reliability, and validity of a basic knowledge about Alzheimer’s disease measure for use in underserved populations. This study also provided insight regarding the impact of health literacy and education on BKAD results, BKAD knowledge gaps in two diverse rural settings, and differences in reported willingness to screen.

Influence of Health Literacy on BKAD results

The surprising lack of impact of health literacy and education on BKAD results suggest that persons do not need to have had years of formal education or higher health literacy

levels to understand important AD concepts. These include, for example, the need for annual screening and importance of staying active and socially engaged. Likewise, lower scores on items in which all participants scored low were not related to health literacy or education. This supports the goal of increasing AD awareness across varied cultures and settings through outreach.

BKAD Knowledge Gaps

Knowledge gaps between different BKAD items varied by setting, but overall, Appalachian residents answered correctly more often than FL participants. In addition to more years of education and health literacy in the Appalachian cohort, factors influencing this may be access to care and public health information. In WV, for example, every county has at least one health care clinic. Other factors influencing differences may be due to increases in public campaigns and provider efforts to educate and manage hypertension and diabetes in Appalachian states. This might explain why items relating to newer findings scored less well, such as the questions asking about the increased risk from head injury or sleep, and the role of vision changes in detecting dementia.

The majority of participants (more than 75%) believed that staying socially, mentally and physically active were important. They also believed that there was medication that would help (68/69%). Almost all (90%) agreed with the statement “the sooner you get help for AD, the more chance you have to slow it down.” Policy makers and providers can be encouraged to increase their efforts to educate patients regarding dementia and availability of annual cognitive screening for persons at risk.

Differences in Interest for Memory Screening

When considering the significant difference between the two groups’ interest in memory screening; $t(227) = 13, p < .001$, it is possible that caregiving experiences may have dissuaded Appalachian residents from seeking memory screening. There were more caregivers in Appalachia (13%) than in the GL Glades (2%). Consequently, Appalachian residents may have been more aware of the burden associated with AD. Anecdotally, Appalachian residents prefer caring for their own family members over nursing home placement and many of the Glades residents did not have family nearby to care for them.

Implications

Results from this study found little variation in overall BKAD total scores among two distinct rural populations, despite diverse sociodemographic factors. Strong reliability ($\alpha = .85$ and Rasch item analysis of .94) indicated favorable performance of the BKAD across both groups of underserved rural older adults. These results support that the BKAD may be useful in varied rural and underserved populations with lower levels of health literacy.

The availability of the BKAD makes it possible to evaluate AD knowledge in rural underserved populations. This has significant clinical implications for nurses, social workers, and medical providers trying to evaluate their clients for understanding of AD before initiating education emphasizing the importance of healthy lifestyle and medication adherence. It is also important for senior center and senior residence employees to be

aware of current knowledge about signs and symptoms of early disease. Eventually, greater awareness of ADRD needs to begin earlier including in high-school and college age individuals so that they can understand the connection between risk factors associated and ADRD in later life such as hypertension, excess weight, high caloric diet, insufficient sleep, and head injuries.

Making the BKAD available in clinics and emergency rooms, accompanied by the Alzheimer's Association "10 Early Signs and Symptoms of ADRD" pamphlets in multiple languages could be helpful in initiating discussions with providers.

BKAD results will assist health educators to identify AD knowledge gaps and inform the design of culturally relevant interventions. For example, based on results of this study, community education in both the FL and Appalachia would emphasize the importance of routine screening for risk factors such as hypertension and diabetes. Caregivers need information about signs and symptoms in the early stages of AD, and more complete understanding of how those with AD experience stress and pain.

Limitations

Limitations of the study included the use of convenience samples and participants for only two rural settings. It would be important to know if AD knowledge gaps are similar across other rural settings and populations, such as the midwest and western regions of the U.S. Another limitation of the BKAD is that items assume some AD awareness. As new findings emerge from the scientific community regarding disease onset and progression, the BKAD will need to be refined.

Conclusion

Research targeting Alzheimer's disease in rural populations has been scant, and many research reports have not distinguished between urban-rural participants. In response to the increasing numbers of older rural underserved residents facing heightened AD risk, the BKAD addresses the need for a measure of AD knowledge that is appropriate for rural underserved populations. The BKAD will be useful for clinicians initiating conversations about Alzheimer's disease. Increasing knowledge about Alzheimer's disease risk, detection, and treatment can help to inform older adults about the importance of early intervention.

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Table 1

Characteristics of BKAD Study Populations

	The Glades, FL %	Campbell County, VA %	Nicholas County, WV; %	Rockingham, County, NC %	Limestone County, AL %
PPSM	3,109	1,538	40.6	165.6	147.8
White	8.8	66.0	97.6	77.9	81.7
African-American	55.6	28.3	.3	18.9	13.5
Hispanic-American	34.2	3.5	.8	6.2	5.8
Native-American	.05	1	.3	6	.2
65	12.3	20.3	21.0	19.3	14.5
↓ Poverty Level	37.4	17.8	21.4	18.1	12.8
No Insurance	24.9	11.7	7.5	13.2	12.1

Note. PPSM = Population Per Square Mile

Table 2

Revised BKAD Items Deleted and New Items Retained Based on Discrimination and Difficulty

Items Deleted for $p < .20$	Items Retained for ($p > .20$)
Persons with AD are not crazy	Wearing a heavy coat when it is hot outside may be a sign of AD
Persons with AD it harder to remember things	A serious head injury may increase AD risk.
Persons with AD may become lost in familiar places	Poor nutrition may increase AD risk
Persons with AD may not understand what is being said to them	Lack of sleep may increase AD risk
AD is a type of dementia	New problems with vision may be an early sign of AD
Medicine may slow down the onset of AD	Trouble counting change may be a sign of AD.

Table 3A

Categorical Sociodemographics of BKAD Study Samples

<i>Variable</i>	FL Glades <i>n</i> = 98		Appalachia <i>n</i> = 130		Combined <i>n</i> = 228	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Previous Memory Screen						
Yes	22	22.4	32	24.6	54	25
No	76	77.6	97	74.6	173	75
Missing			1	.8	1	.4
Desires Memory Screen						
Yes	97	99	81	62.3	178	78.5
No	1	1	48	37.7	49	21.5
See a Health Care Provider						
Yes	93	94.9	115	88.5	208	6.6
No	5	5.1	10	7.7	15	91.2
Missing			5	3.8	5	2.2
Gender						
Male	43	43.9	37	28.5	80	35.1
Female	55	56.1	88	67.7	143	62.7
Missing			5	3.8	5	2.2
Caregiver						
Yes	2	2	16	13	18	7.9
No	96	98	113	87	209	91.7
Missing			1	.4	1	.4
Ethnicity						
African American	76	58.5	32	24.6	108	.47
European American	6	4.6	86	66.0	92	.40
Afro Caribbean	10	7.7	3	2.3	13	.06
Asian American	1	1	1	.8	2	.01
Hispanic American	4	3.1	1	.8	5	.02
Missing	1	1	7	5.5	8	.04

Table 3B

Continuous Sociodemographics of BKAD Study Samples

Variable	Combined Cohorts <i>n</i> = 228		FL Glades <i>n</i> = 98		Appalachia <i>n</i> = 130	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	71.0	8.3	69.5	7.9	72.2	8.4
Years of Education	11.4	3.8	9.4	4.0	12.8	2.9
Years Living Rural	48.1	26.5	41.1	24.4	53.1	26.9
Health Literacy Level [*]	6.0	1.6	3.2	2.9	6.0	1.6

Note.

^{*} 0–3 = 3rd grade and below, 1–3 = 4th–6th grade, 4–6 = 7th to 8th grade, 7 = high school

Table 4

Independent Sample T-tests for Demographic Variables Across Collection Settings

	Appalachia (N=98)		Glades (N=130)		t	df	p
	M	SD	M	SD			
Age	72.2	8.4	69.5	7.9	2.5	221	.014
Years of Rural Living	53.1	26.9	41.1	24.4	3.5	221	.001
Years of Education	12.8	2.9	9.4	4.0	7.0	164.2 ^b	<.001
Health Literacy Level	6.0	1.6	3.2	2.9	8.3	132.2 ^b	<.001

Notes.

*
 $p < .05$,**
 $p < .01$,^b
indicated adjustments for unequal variances

Table 5:

Correlation between BKAD, Age, Years Living Rural, Health Literacy Level, and Education

Measure	1	2	3	4	5
(1) BKAD Total	-				
(2) Age		-			
(3) Years Living Rural		.248 **	-		
(4) Years of Education		-.227 **		-	
(5) Health Literacy Score				.668 **	-

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table 6

Correlations between BKAD Subscale Scores

BKAD Scales	1	2	3	4	5	6
(1) BKAD Total	-					
(2) Risk	.478**	-				
(3) Prevention	.337**	.406**	-			
(4) Detection	.259**	.362**	.260**	-		
(5) Symptoms	.500**	.701**	.377**	.211**	-	
(6) Treatment	.487**	.529**	.398**	.345**	.446**	-

Table 7

Percent Correct of BKAD Scores of Florida Glades and Appalachia Cohorts

<u>BKAD Item</u>	<u>% Correct Appalachia</u>	<u>% Correct Florida Glades</u>
1. The chance of AD is greater if a parent had it.	82	79
2. The sooner you get help for AD, the better chance you have for slowing it down	92	90
3. Persons with AD could remember things if they just tried harder. *	81	77
4. Stopping social activities could be a sign of AD.	80	79
5. Wearing a heavy coat when it is hot outside may be a sign of AD.	59	60
6. A serious head injury may increase AD risk.	66	69
7. Forgetting names of familiar objects may be a sign of AD.	78	80
8. Staying mentally active might help to decrease AD risk.	84	83
9. AD is a normal part of growing older. *	73	71
10. Persons with AD have less pain than other people. *	71	69
11. Being with others may keep your memory sharp.	86	85
12. There is a cure for AD. *	84	82
13. Keeping written lists as reminders are helpful in early AD stages.	77	78
14. Medicine is available that may keep AD from becoming worse.	68	69
15. Being screened for memory problems can take as little as five minutes.	90	85
16. People with early AD never get lost while driving. *	68	64
17. Nothing can be done to reduce AD risk. *	61	61
18. Persons with a history of diabetes, high blood pressure, or stroke are at greater risk of AD.	68	69
19. Poor nutrition may increase your AD risk.	73	71
20. For persons who are over 65, having your memory tested should be part of your regular check-up.	70	73
21. Frequently forgetting appointments may be a sign of AD.	70	68
22. Persons with AD have less stress than other people. *	87	81
23. Losing your keys from time to time is normal.	88	84
24. Persons with AD will always recognize their friends and family members. *	83	81
25. Staying physically active might help to decrease AD risk.	79	78
26. Having difficulty remembering the rules of a game that you have played many times before may be a sign of AD.	71	64
27. People with AD are never depressed. *	67	64
28. Having more trouble following directions may be a sign of AD.	86	85
29. Asking someone the same question over and over again may be a sign of AD.	65	64
30. New problems with vision may be an early sign of AD.	67	69
31. Trouble counting change may be a sign of AD.	69	68
32. Lack of sleep may increase AD risk.	75	74
Total BKAD Score Correct	76%	74%

Note.

* = False