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Preserving Cognition in Older African Americans with Mild Cognitive Impairment.

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1 **Preserving Cognition in Older African Americans with Mild Cognitive Impairment**

2 **Abbreviated Title: Cognition in Older African Americans**

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29 **Key Words:** African American, Diabetes, Cognitive Impairment

30

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33

34 **To the Editor:**

35

36 Twenty five percent of older adults in the U.S. have type 2 diabetes, which increases
37 their risk for cognitive decline.^{1, 2} This risk disproportionately affects African Americans
38 because they have higher rates of diabetes than Whites and worse glycemic control,
39 which magnifies their risk.³ These disparities contribute to why African Americans have
40 twice the rate of Alzheimer's disease as Whites.⁴ There are now 1 million older African
41 Americans with diabetes in the U.S. and their number will double by 2030.⁵ This will
42 multiply the burden of cognitive impairment in older African Americans and necessitates
43 preventive interventions.

44

45 We are conducting an ongoing randomized controlled trial to test the efficacy of
46 Behavioral Activation to reduce cognitive decline in African Americans with Mild
47 Cognitive Impairment. Behavioral Activation is a standardized, evidence-based
48 treatment that is often used to treat depression.⁶ We have uniquely applied this
49 approach to increase participation in physical, cognitive, and social activities in order to
50 preserve cognition. The attention control treatment is Supportive Therapy, which
51 facilitates personal expression but contains no other active elements. Race-concordant
52 community health workers deliver 6 in-home treatment sessions of both interventions.
53 Because of our interest in diabetes and cognition, we examined treatment effects on the
54 subgroup of participants with diabetes who have had 12 month assessments (n = 35).

55

56 **Methods:**

57 At baseline and 12 months (masked to treatment assignment), we administered the
58 Hopkins Verbal Learning Test-Revised Delayed Recall (HVLT) and the Uniform Data
59 Set (UDS) Neuropsychological Battery, which includes tests assessing verbal memory,
60 attention, semantic memory, language, processing speed, visuospatial ability, and
61 executive function. Standardized z scores from the component UDS tests yield the
62 UDS-Composite Score (UDS-CS), which reflects global cognition. Our pilot data
63 indicate that a decrement of 0.45 UDS-CS points translates clinically to the inability to
64 balance a checkbook, do laundry, shop, or prepare meals.

65

66 **Results:** The average age of participants was 75.1 years (SD 6.8); 28 (80%) were
67 women. The Table shows that participants who received Behavioral Activation had
68 improved scores over 12 months in 2 cognitive domains: episodic memory (HVLT
69 score) and executive function/processing speed [Digit Symbol Substitution Test
70 (DSST)]. Supportive Therapy controls had no comparable improvements. On the UDS-
71 CS, a greater proportion of participants who received Behavioral Activation compared to
72 Supportive Therapy improved by ≥ 0.45 points [40.0% vs. 21.1%; OR: 2.50 (.55 -
73 11.33)], and fewer declined by ≥ 0.45 points [6.7% vs. 21.1%; OR: 0.27 (.03 - 2.70)].
74 There were no significant changes in other neuropsychological test scores.

75

76 **Discussion:**

77 The treatment trends observed across three different cognitive measures in this sample
78 of older African Americans with diabetes and Mild Cognitive Impairment suggest that
79 Behavioral Activation may preserve cognition in this high risk group. The sample is
80 small, however, and the analysis is underpowered to detect treatment group
81 differences. Nevertheless, these preliminary findings concur with the results of previous
82 studies indicating that physical, cognitive, and social activity may prevent cognitive
83 decline, and extend these findings now to older African Americans with diabetes.⁷ The
84 latter finding is important because the number and longevity of this population, and their
85 risk for progressive cognitive decline and dementia, are increasing.

86

87 The Behavioral Activation treatment approach simultaneously targets two entrenched
88 health problems in older African Americans (i.e., diabetes and impaired cognition), and
89 may prevent cognitive decline by increasing cognitive (e.g., problem-solving) and
90 physical (e.g., exercise) activities and perhaps by improving glycemic control. These
91 two mechanisms are plausible because physical and cognitive inactivity, as well as poor
92 glycemic control, increase the risk of cognitive decline.^{8,9} Because no disease-
93 modifying treatment for Alzheimer's disease now exists, if an early nonpharmacologic
94 treatment like Behavioral Activation prevents cognitive decline even by one year, it will
95 greatly reduce the personal and societal costs of Alzheimer's disease in older African
96 Americans.¹⁰

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Elements of Financial/Personal Conflicts	BWR		RJC	
	None	No	None	No
Employment or Affiliation				
Grants/Funds				
Honoraria				
Speaker Forum				
Consultant				
Stocks				
Royalties				
Expert Testimony				
Board Member				
Patents				

Personal Relationship					
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100 **Author Contributions**

101 **BWR:** Study concept and design; analysis and interpretation of data; and preparation
102 of the manuscript.

103 **RJC:** Study concept and design; analysis and interpretation of data; and preparation of
104 the manuscript.

105

106 **Sponsor's Role**

107 None.

108

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145 **Table: Cognitive Scores at Baseline and 12 Months by Treatment Group**

146

147 **Behavioral Activation** **Baseline** **Month 12** **paired t** **df** **p-value**

148 **(n=16)**

149

150 HVL T * 1.1 (1.7) 2.9 (2.9) -2.56 15 .022

151

152 DSST 24.2 (11.7) 29.6 (11.3) -2.20 13 .047

153

154

155 **Supportive Therapy**

156 **(n=19)**

157

158 HVL T 1.6 (2.0) 2.6 (2.9) -1.62 18 .122

159

160 DSST 28.2 (11.5) 28.8 (12.1) -.38 15 .708

161

162

163 HVL T = Hopkins Verbal Learning Test

164 DSST = Digit Symbol Substitution Test

165 * mean; (SD); higher scores indicate better cognitive function.

166