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Diabetes distress, daily functioning, and hemoglobin A1c in older Black individuals with diabetes and mild cognitive impairment

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DIABETES



Psychosocial Determinants of Diabetes Control in African American Patients with Mild Cognitive Impairment

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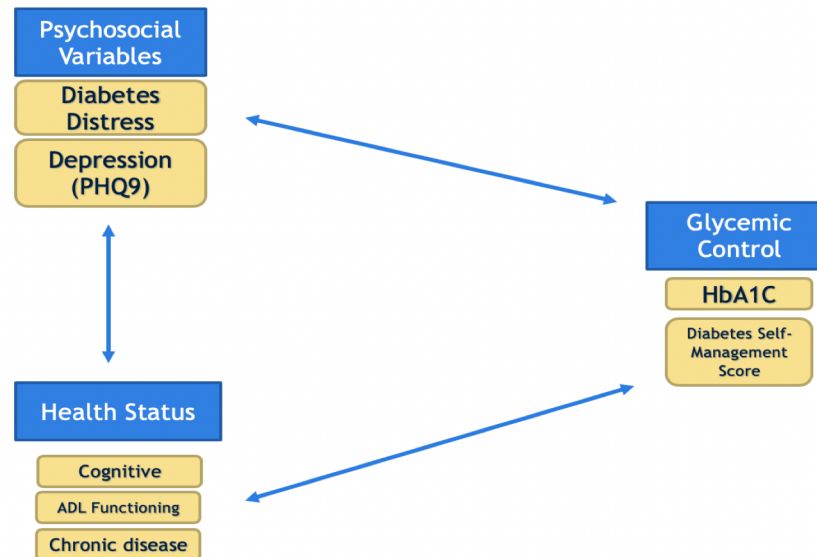
(*) indicates primary project advisor

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- No disclosures.
- Thank you to Dr. Barry Rovner MD and Dr. Robin Casten PhD

Introduction & Objectives

- How do **psychosocial factors, cognitive abilities, and physical health status** affect a **diabetic** patient's ability to maintain **good glycemic control**?
- Our project collected a myriad of data about the mental health and physical co-morbidities of **101 elderly African American individuals with a concomitant diagnosis of Mild Cognitive Impairment and diabetes.**
- We sought to explore the relationships among these different aspects of the patient, and see how it may impact their HbA1c level.



Methods



Pre-SI

- **Study Population:** 101 African-American subjects recruited by referral from PCP for concomitant diabetes and MCI.
- **Design:** All subjects were enrolled in a diabetes education treatment for 12 months.
 - 50 patients randomly assigned to an occupational-therapist led intervention, and 51 assigned to a community health worker.
- **Study Measures:** **Questionnaires** on diabetes distress and diabetes self-management, and neuropsychological tests were administered at baseline, 6 months, and 12 months.

Methods

SI Analysis

- Statistical Measures:
 - **Cross-sectional analysis at baseline (pre-randomization)**
 - Correlations were calculated among all variables in the data-set.
 - A multiple regression was performed in which HbA1C was the dependent variable, and the cognitive and psychosocial factors were independent variables.
 - Data was analyzed in **SPSS, ver. 27.**

Results (Descriptive)

Demographic Characteristics	
Female sex, N (%)	63 (62%)
Education, years, mean +/- (SD)	12.3 +/- 2.1
Age, mean +/- (SD)	68.4 +/- 6.4
Literacy, mean +/- (SD) ^a	24.0 +/- 7.5
BMI	33.5 +/- 6.7
Financial Burden ^b	2.5 +/- 1.1
Health Status and Cognition	
HbA1c _c mean +/- SD	9.3 +/- 1.6
Number of chronic medical conditions, mean number +/- SD	5.6 +/- 2.3
ADL Score, mean +/- SD ^c	34.9 +/- 7.6
Trails A, mean, SD ^d	67.5 +/- 32.4
Trails B, mean +/- SD ^e	217.8 +/- 80.6
Logical Memory (immediate), mean +/- SD ^f	8.6 +/- 2.9
Logical Memory (delayed) mean +/- SD ^g	6.3 +/- 3.2
Digit Symbol, mean +/- SD ^h	33.0 +/- 13.5
Mini Mental Status Exam, mean +/- SD ⁱ	25.4 +/- 2.6
Mental Health	
Diabetes Distress - emotional mean, +/- SD ^j	3.0 +/- 1.6
Diabetes Distress - regimen-related, mean +/- SD ^k	3.4 +/- 0.7
Diabetes Distress - interpersonal, mean +/- SD ^l	2.4 +/- 1.6
Diabetes Distress - physician-related mean, SD ^m	1.7 +/- 1.1
Depression, PHQ9 score, mean +/- SD ⁿ	7.7 +/- 6.2

- Mean Age: 68.4 years
- Sex: 62% Women
- Mean BMI: 33.5
- Mean HbA1c: 9.3%
- Mean MMSE(Cognitive): 25.4
 - Lower than in normal population
- ADL Score: 34.9
 - Range 0 to 65
- Diabetes Distress-regimen: 3.4

Results (Correlations)

	HbA1c
Demographics	
<u>Sex</u>	0.18
Education, years completed	-0.01
Age, years	-0.21*
Literacy score	-0.15
<u>Body Mass Index (BMI)</u>	0.01
<u>Financial Burden</u>	0.09
Health Status and Cognition	
Number of chronic medical conditions	0.124
ADL Score	-0.28**
Trails A	-0.10
Trails B	-0.05
Logical Memory (immediate)	-0.03
Logical Memory (delayed)	-0.05
Digit Symbol	-0.01
MMSE	0.02
Mental Health	
Diabetes Distress - emotional	0.28**
Diabetes Distress - regimen-related	0.33**
Diabetes Distress - interpersonal	0.27**
Diabetes Distress - Physician Related	0.06
Depression, PHQ9 score, mean	0.18

* $p < 0.05$

** $p < 0.01$

Results (Linear Regression)

	Unstandardized Beta (95% CI)	p-value
Model 4		
Age	-0.04 (-0.10, 0.03)	0.235
Sex	0.40 (-0.29, 1.08)	0.248
Education	0.09 (-0.11, 0.28)	0.376
Literacy	-0.02 (-0.09, 0.04)	0.471
BMI	-0.03 (-0.08, 0.03)	0.331
Financial Burden	-0.15 (0.50, 0.21)	0.418
Number of health conditions	-0.01 (-0.18, 0.16)	0.902
Diabetes Distress - emotional burden	-0.01 (-0.32, 0.32)	0.997
Diabetes Distress - physician-related	-0.04 (-0.29, 0.36)	0.827
Diabetes Distress - regimen-related	0.69 (0.19, 1.20)	0.008
Diabetes Distress - interpersonal	0.18 (-0.08, 0.45)	0.174
Depression	-0.03 (-0.10, 0.04)	0.388
Trails A	-0.01 (-0.02, 0.01)	0.348
Trails B	0.00 (-0.01, 0.01)	0.493
Digit Symbol Substitution	-0.02 (-0.05, 0.02)	0.362
Logical Memory (Immediate)	-0.04 (-0.14, 0.23)	0.660
Logical Memory (delayed)	-0.04 (-0.21, 0.14)	0.673
Mini Mental Status Exam	0.10 (-0.07, 0.28)	0.232
ADL Score Self-Reported Functioning	-0.07 (-0.13, -0.01)	0.019

- Regimen-related diabetes distress and self-reported functioning by ADL Score **significantly** contributed to the model for glycemic control.

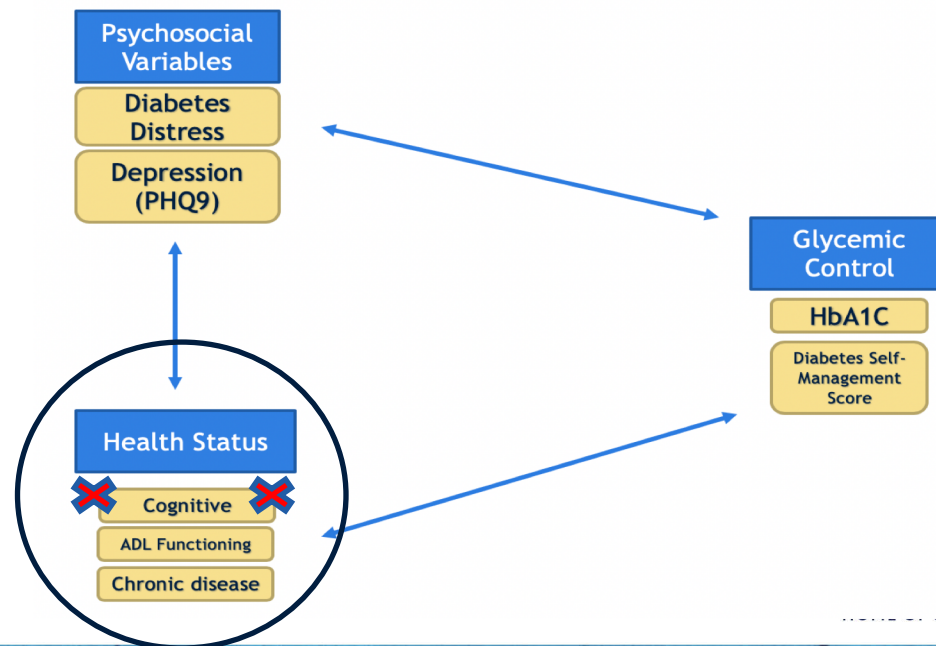
Discussion

- We **did** find that **distress** related to one's **diabetes regimen** (including instructions for medications, exercise and diet) is **significantly associated with HbA1c**
- We also found that **self-reported daily function** (a self-reported measure of how comfortable one feels they can accomplish daily tasks) is significantly associated with HbA1c
- This evidence suggests that **diabetes-related distress** and **physical comorbidities** play important roles in **glycemic control**.
- Limitations: Cognitive scores were restricted to the lower end due to MCI. The study is cross-sectional so cannot make any causal conclusions.



Discussion: The Surprise

- Even though our patients have diabetes and **MCI**, we found that **cognitive capacity did not significantly affect one's HbA1C level**
 - As many health professionals may assume cognitive impairment is the reason that patients struggle with controlling their diabetes, we should instead shift some focus to other psychosocial and health related factors.



Future Direction



More holistic diabetes interventions, such as culturally-appropriate diabetes education and attention to the mental health of patients, should be utilized to better help Black patients with diabetes and MCI

Thank you.

Questions?



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