Primary Care-OT for Older African Americans with Diabetes and Mild Cognitive Impairment: Intervention Approaches and Case Stories

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Background

- Prevalence of Type 2 diabetes (DM) in older persons is rapidly increasing.
- DM increases the risk for Mild Cognitive Impairment (MCI), which is a transition state between normal cognition and dementia that is often characterized by memory and executive function deficits.
- Cognition deficits reduce adherence to DM medications, which worsens glycemic control and increases the risk for adverse DM-related health outcomes.
- Improving medication adherence may prevent these outcomes & reduce health care costs.
- Older African Americans have twice the rate of DM, worse cognitive function, lower medication adherence, and worse glycemic control than whites.
- One million older African Americans now have DM and their number will double by 2030.
- Because 30 percent also have MCI, low medication adherence is an important problem.
- There is a need for culturally relevant interventions that compensate for cognitive deficits and improves medication adherence and glycemic control.

Purpose: To test the efficacy of a collaborative intervention to lower hemoglobin A1c levels (HbA1c) in older African Americans with Type 2 diabetes (DM), Mild Cognitive Impairment (MCI), and suboptimal medication adherence and glycemic control.

Aims:

1. To reduce HbA1c level by 0.5% at 6 and 12 months.
2. To increase MEMS-measured adherence to an oral DM medication at 6 and 12 months.

Hypotheses:

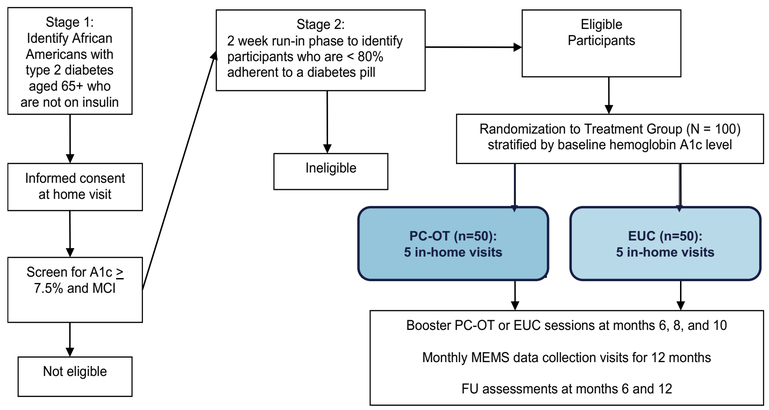
1. Fifty-five percent of intervention participants, compared to 25% of control participants, will have a reduction in HbA1c of 0.5% at 6 months (short term effect) and 12 months (maintenance effect).
2. The *Primary Care-Occupational Therapy* intervention will increase MEMS-measured adherence to a greater extent than *enhanced usual care* at 6 and 12 months.

Flow Chart & Study Design

Randomized controlled trial (RCT) stratified by baseline A1c level.

Intervention: *Primary Care-Occupational Therapy (PC-OT)*

Control: *Enhanced Usual Care (EUC);* usual medical care plus low intensity Diabetes Self-Management (DSM) education, delivered by community healthcare worker.



Improving Medication Adherence in Older African Americans with Diabetes, B. Rovner, Principal Investigator, 2015-2019
Funded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), R01 DK102609

Home-based Primary Care-OT (PC-OT) Intervention

PC-OT aims to lower HbA1c levels by increasing adherence to medications and other diabetes self-management (DSM) practices.

Behavioral Activation

Behavioral technique to help people overcome avoidant tendencies through goal setting, activity scheduling, and graded task assignment.

Key components:

1. Developing an Action Plan based on goals.
2. Documenting each step of the Action Plan.
3. Reinforcing the steps towards goal attainment.

Occupational Therapy

Assess functional cognition, medication management, habits & routines, beliefs, home environment

Identify barriers to medication adherence and DSM and establish treatment plan

Deliver OT treatment and diabetes education using ***principles of Behavioral Activation***

Inform PCP of assessment results, goals & plan, patient concerns & successes

Collaborate with PCP via Electronic Medical Record (Epic)

Primary Care

Deliver primary care services as necessary

Inform occupational therapist of health status including medical diagnoses, health conditions, medications

Collaborate with occupational therapist via Electronic Health Record (Epic)

Baseline Data (N = 101)

Variable			Statistic
Age	Years	*M* (SD)	68.44 (6.38)
Gender	Male	n (%)	38 (37.6)
	Female		63 (62.4)
Marital Status	Married	n (%)	30 (29.7)
	Widowed		25 (24.8)
	Divorced		20 (19.8)
	Separated		10 (9.9)
	Never married		16 (15.8)
Education	<12 years	n (%)	28 (27.7)
	12 years		36 (35.6)
	>12 years		37 (36.7)
Living Status	Lives alone	n (%)	40 (39.6)
	Not alone		61 (60.4)
PHQ-9[1]	Score	*M* (SD)	7.68 (6.16)
	>10 score[2]	n (%)	31 (30.7)
MMSE[3]	Score	*M*, SD	25.30 (2.61)
HbA1c	Blood Sugar Level	*M*, SD	9.3 (1.6)
Medication Adherence[4]	% days (2 weeks)	*M*, SD	37.3 (30.4)

1=PHQ-9 = Patient Health Questionnaire; 2=moderate-severe depression severity; 3=MMSE = Mini Mental status Examination;
4=Medication Adherence = % days correct dose taken at correct time

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Case Stories

Participate A: 63 year old mother and grandmother; separated from husband; lives alone; works full time in retail sales; very active in Church; grieving the recent death of her mother.

Assessment Results:

Habits & Routines and Beliefs: **Rarely:** eats recommended food portions; takes diabetes medication on time; eats meals/snacks on time. **Never:** treated low blood sugar
Functional Cognition: ACLS-5 & ADM-2 = Allen Cognitive Level 5.0
- Requires assistance to set up daily plan and manage medications
- Can expend excessive energy while exploring ways to perform activities

Medication Management: Performance Assessment of Self-care Skills (PASS)
- Independence: 2.8/3.0; Safety: 3/3; Adequacy: 2/3

Targeted Goals:

Blood sugar testing & values | Stress management | Medication management | Calculate and track carbohydrates | Nutrition & portion control | Exercise

A1c Level: Baseline: **10.3**; 4 Months: **6.6**; 12 Months: **6.3**

Strategies for Medication Management:

1. Create one medication control center in view
2. Use a daily checklist to record taking medications
3. Use evening alarm on phone as a reminder to take evening insulin

Tools & Devices:	Purpose:
Extra Glucometer and Strips	Glucometer for work to test blood sugar when symptomatic
APPs for Phone	Meditation & Exercise
My Plate	Portion Control /Nutrition

Visit	Patient Goal	Outcome
2	Test & Record Fasting Blood Sugar 7x7 days a week	Achieved on visit 4 & Maintained through 12 month visit
3	Test blood sugar 7 nights a week	Achieved on visit 4 Discontinued on 8 month visit due to cost of strips
3	Test and record blood sugar 2 hours after dinner 7 days a week	Achieved on visit 4; Decreased testing to 4/7 nights Discontinued on 8 month visit due to cost of strips
4	Exercise 2 x a week for 30 minutes	Achieved on 6 month Increased to 4x a week on 12 month
5	Make mental health counselor appointment	Not achieved due to lack of counselors at site
6 month	Try APP for Exercise & Meditation	Achieved on 8 month & continued use of Meditation App through 12 month

Participant B: 66 year old female with multiple chronic autoimmune diseases: separated from husband who is in a nursing home with dementia, lives with her son, mother , grandmother

Assessment Results:

Habits & Routines and Beliefs: **Rarely**: eats recommended food portions; takes diabetes meds on time; eats meals/snacks on time. **Never:** treated low blood sugar. Medication often missed due to forgetting and depression; eats 1-2 meals a day due to lack of hunger.
Functional Cognition: ACLS-5 & ADM-2 = Allen Cognitive Level 4.8
Medication Management: Performance Assessment of Self-care Skills (PASS)
- Independence: 3/3; Safety: 3/3; Adequacy: 2/3

Targeted Goals:

Stress management & assertiveness | Nutrition & portion control | Leisure & social participation | Treatment of low & high blood sugar | Medication management

A1c Level: Baseline: **8.4**; 4 Months: **7.0**; 12 Months: **7.7**

Strategies for Medication Management:

1. Create medication center in one area in view on first floor
2. Use a daily checklist to record taking medications
3. Put reminder on refrigerator to take insulin
4. Use weekly medication sorter for all medications
5. Use evening alarm as a reminder to take evening insulin

Tools & Devices:	Purpose:
Weekly medication sorters	Keep medications organized
My Plate	Portion Control /Nutrition
Day Timer Calendar	Keep appointments; notes and track meds/insulin

Visit	Patient Goals	Outcome
3	Take insulin 4 times a day; 5/7 days a week	Achieved visit 4 At 8 month visit: night time insulin 7/7 nights a week; meal time insulin 2/3 times a day
3	Create a medication center and keep all medicines in view	Achieved visit 4
4	Sort all medications into weekly medication sorters	Achieved visit 5
5	Test blood sugar when symptomatic in the middle of the night 50% of time & treat Low blood sugar	Achieved at 6 month visit: completed 3/5 times
6 month	Create notes as a reminder to eat 3 meals a day and post in bedroom and kitchen	Not achieved at 8 month visit due to stress At 12 month visit reported pairing eating with taking insulin