

Post-Intervention Support Groups: Effects on Cognitive, Physical, and Behavioral Outcomes

Introduction

- As the aging population grows in the United States, diet-focused lifestyle interventions have received increased recognition in efforts to reduce Alzheimer's disease and related dementias (ADRD) risk.¹ Through promoting healthier eating patterns, diet-based interventions offer a practical and accessible way to help older adults preserve cognitive function by addressing modifiable dementia risk factors.²
- Some studies have shown that long-term follow-ups can benefit older adults at risk for ADRD.³ In addition, some research suggests that social support enhances individuals' perceived ability to adhere to lifestyle changes and to cope with barriers to long-term change.⁴
- Yet post-intervention groups among older adults are largely understudied in the literature.⁵ Evaluation of the effects of ongoing support groups for enhancing maintenance of dietary and lifestyle changes, as well as the effects on clinical outcomes,⁶ is critical for improving the effectiveness and quality of lifestyle interventions for older adults.⁷ Additionally, the outcomes associated with diet.⁹

Hypotheses

- Hypothesis 1:** Participants in support groups will show greater maintenance or improvements in physical (e.g., BMI, blood pressure) and behavioral health (eg., sleep quality, PA) indicators compared to non-support group participants.
- Hypothesis 2:** Participants in support groups will show greater improvements in cognitive functioning across the long-term follow-ups.

Methods

Participants

- Older adults (55-85, N=65) cognitively normal or with mild cognitive impairment (MCI) were recruited to participate in a pilot randomized clinical trial.

Study Design

- 2x2 factorial design, including 4 study arms (N~16 per arm).
- All arms examined the 10-week Improving Cognitive Aging through Nutrition (ICAN) adherence program. Support groups met monthly for the remainder of the year (~10 months) following the 10-week ICAN program.
 - Arms: 1) Modified Mediterranean ketogenic diet (MMKD) ICAN + monthly support groups, 2) MMKD ICAN with no support groups, 3) Mediterranean diet ICAN + support groups, 4) MED ICAN with no support groups.
- All outcomes were measured at baseline, 10-week, 6 months, and 12-months.

Measures

- Physical Health** was assessed by measuring participants' Systolic Blood Pressure, Lipid Panel measuring both HDL and LDL cholesterol, and triglycerides. HbA1C and lipid panel values were obtained and analyzed from venous blood samples of participants.
- Behavior change** was assessed by measuring sleep quality utilizing the self-reported Pittsburgh Sleep Quality Index (PSQI; 0-21; higher score = worse sleep quality), self-reported Physical Activity rating, and MEDAS (Mediterranean Diet Adherence Screener; 0-14; higher score = higher adherence) Total scores.
- Cognitive Health** was assessed using the NIH Cognitive Toolbox, an assessment battery that measures cognitive functioning using Dimensional Change Card Sort Test (DCCS; executive function), Face Name Associative Memory Exam (FName; memory, learning, delayed, visual, immediate) Delay, Flanker Inhibitory Control and Attention (Flanker; executive function & attention), List Sorting Working Memory Test (LSWM; working memory), Ray Auditory Verbal Learning + Ray Auditory Verbal Learning Delay (memory, learning, delayed, visual, immediate), and Speeded Matching Test (SM; processing speed).

Analysis

- Statistical analyses were conducted using SPSS. Descriptive statistics were calculated to summarize participant characteristics and study variables. Independent sample *t*-tests were then used to compare changes in outcomes between participants in the support group and those in the non-support group. A box plot was also generated to visually display differences in outcome distributions across groups.

Results

Table 1

Demographics of the Sample Population (N= 66)

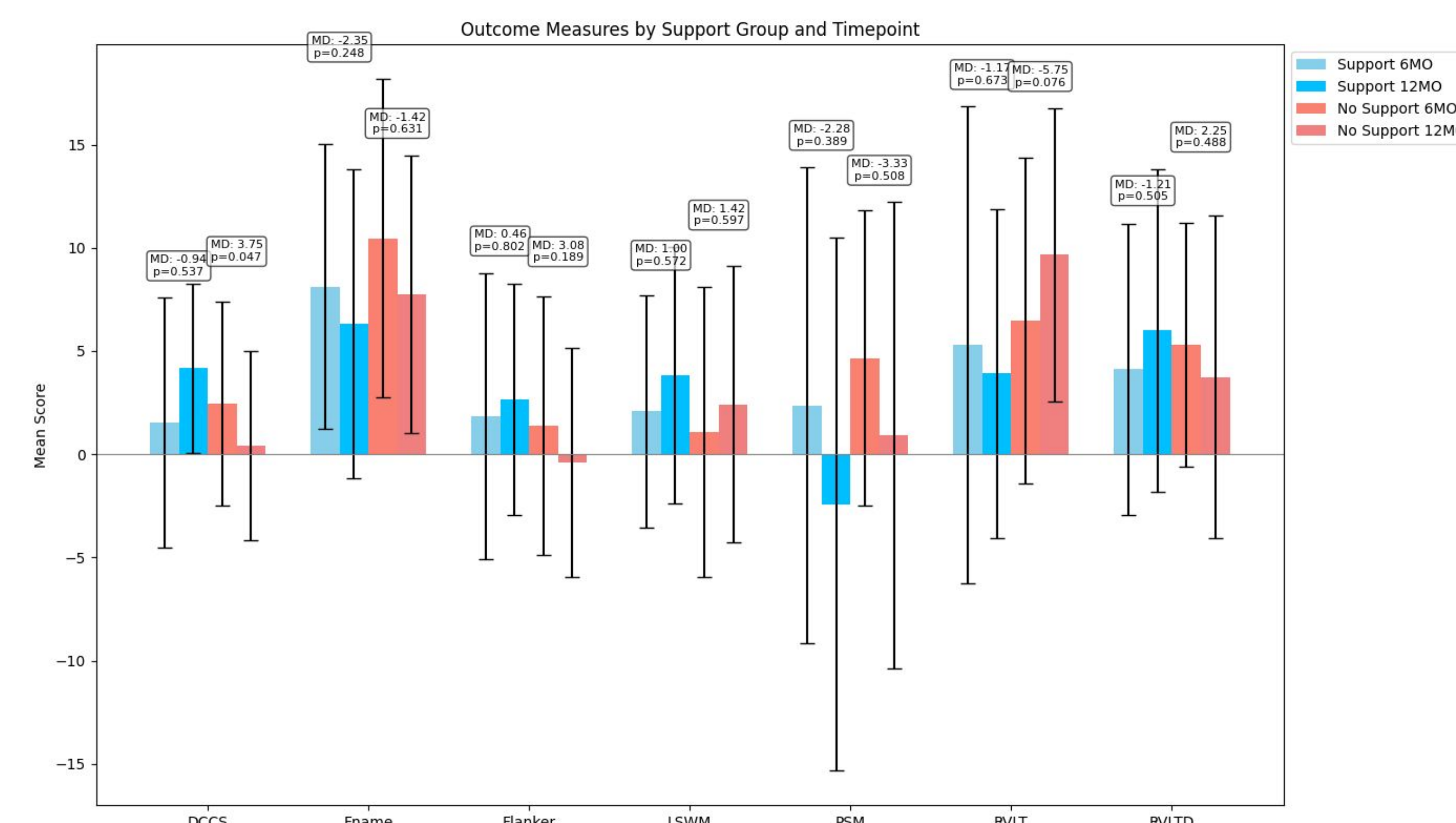
Variable	Category	Mean (SD)	Valid Percent (%)
Age (Years)		70.31 (5.75)	
Gender (Coded)		0.26 (0.44)	
Male	N= 17		74.2
Female	N= 49		25.8
Race/Ethnicity			
	White		47.6
	Black		15.9
	African American		27.0
	Hispanic		4.8
	Other		4.8
Education Level			
	High School or Equivalent		7.6
	Some College (No Degree)		10.6
	Associate's degree		10.6
	Bachelor's Degree		25.8
	Master's Degree		33.3
	Doctoral Degree (PhD & Doctorate)		10.6

Cognitive Outcomes

- There were no significant differences between the support and control groups in changes in cognitive outcomes from baseline to 6 months ($ps > .05$). From baseline to 12 months, there was a significant group difference in change on the Dimensional Change Card Sort Test (DCCS), a measure of executive functioning ($t(22) = 2.11, p = .046$), such that the support group showed greater improvement ($M = 4.17, SD = 4.11$) compared to the control group ($M = 0.42, SD = 4.58$).

Physical and Behavioral Outcomes

- There were no significant differences between the support and control groups in cardiovascular or metabolic outcomes from baseline to 6 months or from baseline to 12 months ($ps > .05$).
- There were also no significant differences between groups in changes in sleep or physical activity from baseline to 6 months or 12 months ($ps > .05$) or between arms of their MEDAS (Mediterranean Diet Adherence Screener) scores ($ps > .05$).



Conclusions

- Our analyses provided limited evidence for the effectiveness of support groups in improving overall cognitive, physical, or behavioral outcomes related to MED and MMKD adherence.
- Participation in support groups was associated with greater executive functioning. This demonstrates how the use of support groups can improve cognitive functioning, even without the direct effect on blood biomarkers. This finding can be attributed to the role of support groups toward positive social interactions and emotional support in adult participants.⁸
- In contrast, the minimal change in both physical and behavioral outcomes may illustrate that support groups alone may not be sufficient to influence blood biomarkers or health behaviors over time. Thus, improvements in these outcomes may require additional intervention components.
- This study was based on a small sample size and was pilot data, which may limit generalizability of the findings and increase sensitivity of results from outliers and random variation.
- Larger scale studies are needed to better evaluate the effectiveness of support groups on dietary adherence and related cognitive, physical, and behavioral outcomes.
- By focusing on support vs. non-support groups, the outcome differences between the group on the MED diet and the MMKD diet were not looked at in this study.
- The diets may have different effects on cognitive, physical, and behavioral health but a different study would need to be completed.
- Future research could look into the interactions between diets and support groups on health outcomes.

References

