Are the dietary intake patterns of patients seen in a geriatric clinic associated with their cognitive function status?

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Introduction

Cognitive decline currently places a large burden on our healthcare system. Both patients and caregivers face significant time and monetary constraints related to caring for these conditions[1]. Presently, it is estimated there are 6.5 million Americans today that are living with Alzheimer's disease[1]. Not only that, but this number is projected to increase drastically to 13.8 million cases by the middle of the century[1]. There is a necessity for innovation both in the treatment and prevention of cognitive decline. The Mediterranean-DASH Diet Intervention for Neurodegenerative Delay (MIND) dietary pattern has recently been developed and implicated for use as a prevention for cognitive decline[2,3]. As this is a relatively new topic, it warrants further investigation. In this study, we aim to further characterize the associations between the MIND dietary pattern and functional cognitive status, as seen in patients in a geriatric clinic.

Paharia P. Foods that compose the MIND diet. News-medical.net. June 17, 2025.

Aims and Objectives

The specific aims of the study are as follows:

Aim I: To determine the dietary intake patterns consumed by patients seen in a geriatric clinic.
Aim II: To identify level of cognitive function status in patients seen in a geriatric clinic
Aim III: To determine if the MIND dietary pattern of intake is associated with better cognitive function.

This study provides further insight as to the relationship between the consumption of foods featured in the MIND dietary pattern and current cognitive functional status in individuals seen at a geriatric clinic. By expanding on the current data available, we continue the discussion regarding both this practice and the search for the prevention and treatment of cognitive decline.

Methods

This clinical translational project was a prospective study, looking to assess if there is an association between the dietary intake patterns and levels of cognitive decline in patients seen in a geriatric clinic.

Participants were recruited from a pool of individuals that receive health care at a local geriatric clinic. Participants completed a Food Frequency Questionnaire, which was be scored according to MIND dietary pattern criteria[4].

Food Frequency Questionnaire surveyed participants on how often they consumed each of the following:
-Fast food
-Sweets, candy bars, pastries, cookies, or cakes
-Butter or stick margarine
-Whole fat, regular cheese, cream cheese
-Red meat or processed meat including steak, ham, roast, hamburger, hot dogs, and sausages
-Fish (not fried)
-Poultry including chicken or turkey (not fried, skinless)
-Olive oil
-Green leafy vegetables including spinach, kale, greens, romaine
-Other vegetables including broccoli, carrots, peas, onions, green/red peppers, celery, string beans, tomatoes, yams, squash, eggplant
-Berries including strawberries, blueberries, raspberries
-Beans and legumes
-Whole grain breads, pasta, and cereal
-Nuts

Each patient's cognitive function status was assessed using the Mini Mental Status Exam, a cognitive function measure[5].

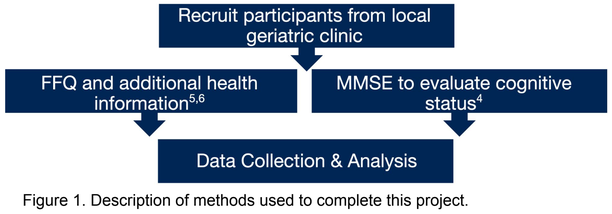

Figure 1. Description of methods used to complete this project.

We collected health data including diagnosis of dementia and dementia-like conditions, current age, as well as pertinent history including smoking history, history of cardiovascular disease, exercise history, history of stroke, history of brain cancer, history of drug use, history of diabetes, and family history of dementia and dementia-like conditions.

Results

Primary Predictor: Food Frequency Score (FFQ)
-In the multivariate model, the FFQ score had a Point Estimate (PE) of 0.30. This indicates that for every 1-point increase in the Food Frequency Score, the MMSE score increased by 0.30 points, holding all other variables constant.
-The p-value was 0.0524.

Other Significant Factors (Adjusted Model)
-**Exercise**: This was the strongest positive factor. Those who exercise had an MMSE score 2.89 points higher than those who do not ($p < 0.0001$).
-**Age**: As age increases, the MMSE score decreases. Specifically, for every additional year of age, the MMSE score drops by 0.22 points ($p < 0.0001$).
-**Smoking**: A history of smoking was associated with a 2.48 point lower MMSE score compared to non-smokers ($p = 0.0003$).
-**Dementia Diagnosis**: Naturally, those with a previous diagnosis scored significantly lower (-3.99 points) than those without ($p < 0.0001$).

An interesting finding in this analysis was the shift in the relationship between BMI and MMSE scores:
In the initial univariate analysis, BMI showed a moderate positive correlation ($r = 0.52$, $p = 0.0696$), suggesting that higher BMI was associated with better cognitive scores. However, once we adjusted for age, food frequency score, smoking, and exercise in the multivariate linear regression model, the relationship became significantly negative (PE = -0.15, $p = 0.018$). This shift suggests that BMI may have been acting as a proxy for other health-promoting behaviors in the simple analysis. For example, individuals with a higher BMI in this small group might have been the ones who were physically healthier or better nourished overall. Once the model held constant the benefits of regular exercise and a good diet, the independent effect of higher BMI was shown to be associated with lower MMSE scores. This highlights the importance of using multivariate models to isolate the specific impact of lifestyle factors on cognitive health.

Conclusions

In this study, we aimed to determine if the MIND dietary pattern of intake is associated with better cognitive function. Our data analysis demonstrated that for a 1-point increase in the Food Frequency Score, there was a 0.3 point increase in the MMSE score while holding all other variables constant. This was supported with a p-value of 0.0524. While technically just above the traditional 0.05 cutoff, in a sample of only 13 people, this is a strong trend. It suggests that dietary pattern likely has a meaningful relationship with cognition that might become statistically significant in a larger study. Additionally, we found that exercise to be the strongest positive factor. Participants with positive exercise history were found to have an MMSE score 2.89 points greater than those without history of exercise. Smoking was also found to be negatively correlated with MMSE scores as those with positive smoking history were associated with a 2.48 point decrease in MMSE score. The most notable limitation of this study is the sample size, and due to this, these results should be viewed as exploratory. At the same time, the fact that exercise and dietary patterns show such strong trends even in this group suggests these are powerful influencers of cognitive health and indicate the need for continued research in this area.

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