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Objective: Individuals with major depressive disorder (MDD) are observed to have reduced plasma nitrate levels and plasma nitric oxide (NO) metabolites (Chrapko et al., 2004; Garcia et al., 2011). Endothelial cell dependent dilation of vascular smooth muscle function has been observed to be blunted in adults with Major Depressive Disorder (MDD) and mediated by NO-dependent dilation (Greaney et al., 2019). Certain vegetables and fruits are particularly high in dietary nitrates, which is reduced to nitric oxide in the stomach, entering intravascular circulation, and acting as a potent dilator, blood pressure reducing, and vasoprotective substance (Webb et al., 2008). In older adults, dietary nitrates which are found in certain vegetables and fruits (e.g., green leafy vegetables) is shown to increase cerebral blood perfusion in frontal lobe white matter between the dorsolateral prefrontal and anterior cingulate cortex, regions particularly implicated in cognitive functioning (Presley et al., 2011). Recently, Morris et al. (2018) observed that in older adults from the Memory and Aging Project (MAP), the highest quintile of dietary nitrate intake was associated with slower cognitive decline than that of the lowest quintile of nitrate intake. Although viewing the extremes of dietary nitrate intake reveals valuable information, the present study investigated the association of all levels of dietary nitrate intake with cognition and depression among older adults in the same MAP dataset.

Participants and Methods: The sample included 461 community dwelling older adults (Mean=80; Mean =14.9, 74% female) from the MAP study (Bennett et al., 2012). The measures used for the present study include: the Center for Epidemiological Studies Depression Scale (CESD, depression), a neuropsychological battery (global cognition, perceptual organization and semantic memory), and a dietary nutrient analysis of the food frequency questionnaire (FFQ, nitrate).

Results: Using Pearson correlations we observed that increased dietary nitrate intake was associated with increased global cognition ($r(458) = .100, p = .031$), perceptual organization ($r(448) = .095, p = .04$) and semantic memory

($r(453) = .142, p = .002$). Furthermore, we observed that dietary nitrate intake was associated with lower depression severity ($r(459) = -.132, p = .004$).

Conclusions: The present study's results revealed that in a sample of community dwelling older adults, eating more nitrate rich foods is not only associated with improved cognition similar to findings of Morris et al. (2018), it is also associated with lower levels of depression. This further extends the Morris et al. (2018) study by suggesting that it is not only those older adults who eat the highest quantity of nitrate rich foods that can benefit from higher levels of nitrate intake. Overall, this study reveals that older adults who increase their dietary nitrate intake may improve their mood and thinking ability.

Categories: Aging

Keyword 1: aging (normal)

Keyword 2: cognitive functioning

Keyword 3: depression

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45 Relationship Between Degree of Cognitive Impairment and Performance on Measures of Health Numeracy and Literacy in a Memory Disorders Clinic

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Objective: Understanding healthcare information is an important aspect in managing one's own needs and navigating a complex healthcare system. Health numeracy and literacy reflect the ability to understand and apply information conveyed numerically (i.e., graphs, statistics, proportions, etc.) and written/verbally (i.e., treatment instructions, appointments, diagnostic results) to communicate with healthcare providers, understand one's medical condition(s) and treatment plan, and participate in informed medical decision-making. Cognitive impairment has been shown to impact one's ability to understand complex medical information. The purpose of this study is to explore the

relationship between the degree of cognitive impairment and one's ability to perform on measures of health numeracy and literacy.

Participants and Methods: This cross-sectional study included data from 38 adult clinical patients referred for neuropsychological evaluation for primary memory complaints at an urban, public Midwestern academic medical center. All patients were administered a standardized neurocognitive battery that included the Montreal Cognitive Assessment (MoCA), as well as measures of both health numeracy (Numeracy Understanding of Medicine Instrument-Short Version [NUMI-SF]) and health literacy (Short Assessment of Health Literacy-English [SAHL-E]). The sample was 58% female and 60% Black/40% White. Mean age was 65 ($SD=9.4$) and mean education was 14.4 years ($SD=2.5$). The sample was further split into three groups based on cognitive diagnosis determined by comprehensive neuropsychological assessment (i.e., No Diagnosis [34%]; Mild Cognitive Impairment [MCI; 29%]; Dementia [34%]). Groups were well matched and did not statistically differ in premorbid intellectual functioning ($F=1.96, p=.157$; No Diagnosis, $M=100, SD=7.92$; MCI, $M=99, SD=8.87$; Dementia, $M=94, SD=7.72$) ANOVAs were conducted to evaluate differences between clinical groups on the MoCA, NUMI-SF, and SAHL-E. Multiple regressions were then conducted to determine the association of MoCA scores with NUMI-SF and SAHL-E performance.

Results: As expected, the Dementia group performed significantly below both the No Diagnosis and MCI groups on the MoCA ($F=19.92, p<.001$) with a large effect ($\eta_p^2=.540$). Significant differences were also found on the NUMI-SF ($F=5.90, p>.05$) and on the SAHL-E ($F=6.20, p>.05$) with large effects ($\eta_p^2=.258$ and $\eta_p^2=.267$, respectively). Regression found that MoCA performance did not predict performance on the NUMI-SF and SAHL-E in the No Diagnosis group ($F=2.30, p=.809$) or the MCI group ($F=1.31, p=.321$). Conversely, the MoCA significantly predicted performance on the NUMI-SF and SAHL-E for the Dementia ($F=15.59, p=.001$) group.

Conclusions: Degree of cognitive impairment is associated with understanding of health numeracy and literacy information, with patients diagnosed with dementia performing most poorly on these measures. Patients with normal cognitive functioning demonstrated a significantly better understanding of health

numeracy and health literacy. This study supports the notion that as cognitive functioning diminishes, incremental support is necessary for patients to understand medical information pertaining to their continued care and medical decision-making, particularly as it relates to both numerical and written information.

Categories: Aging

Keyword 1: aging disorders

Keyword 2: cognitive functioning

Keyword 3: decision-making

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46 Cognitive Reserve and Gait Speed are Associated with Cognitive Performance in Black/African American Older Adults

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Objective: Cognitive reserve and health-related fitness are associated with favorable cognitive aging, but Black/African American older adults are underrepresented in extant research. Our objective was to explore the relative contributions and predictive value of cognitive reserve and health-related fitness metrics on cognitive performance at baseline and cognitive status at a 4-year follow up in a large sample of Black/African American older adults.

Participants and Methods: Participants aged 65 years and older from the Health and Retirement Study (HRS) who identified as Black/African American and completed baseline and follow-up interviews (including physical, health, and cognitive assessments) were included in the study. The final sample included 321 Black/African American older adults (mean age = 72.8; $sd = 4.8$; mean years of education = 12.3; $sd = 2.9$; mean body mass index (BMI) = 29.1; $sd = 5.2$; 60.4% identified as female). A cross-sectional analysis of relative importance – a measure of partitioned variance controlling for collinearity and model order – was first used to explore predictor variables and inform the hierarchical model order. Next, hierarchical multiple regression was used to examine cross-sectional relationships between cognitive reserve (years of education), health-related