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Link between cognitive status and motivation to make lifestyle changes to prevent Alzheimer’s Disease: The Gray Matters Study

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I. Introduction

Research on prevention strategies have shown promising results for delaying onset of Alzheimer’s disease with simple lifestyle changes.

Preventable medical conditions linked to increase risk for AD include:
• high blood pressure
• sedentary lifestyle
• poorly managed diabetes

Several behavioral factors have been associated with risk of developing the disease. These include:
• sleep quality
• stress-management
• social engagement
• cognitive activity

Although there are known genetic factors, current estimates attribute less than 35% of all diagnoses to heredity alone.

II. Methods

A six month, randomized-controlled trial was conducted in Cache County, Utah to develop and test a healthy lifestyle intervention towards lowering Alzheimer’s risk.

Neuropsychological tests were conducted on 146 participants aged 40 to 64 years. Measures of perceived stress, depression, sleep quality, and motivation for change were also collected from surveys.

Various medical tests were conducted to discover cholesterol level, blood pressure, body-mass index, and other basic statistics.

Participants were given a smartphone app (figure 1) which provided suggestions for healthier lifestyle choices and logged progress over the course of study. Each participant was also given an activity band to help track physical activity. Cognitive and medical tests were given at study entry and upon exit.

Psychological screenings were assessed upon entry, at mid-study, and study exit.

Figure 1: Screen shots of App providing healthier lifestyle choices and tracking tools

III. Results

These variables were correlated to reveal the relationship between cognitive status and mental health among middle aged individuals.

Poorer sleep quality predicted:
• Poorer overall health (p=.047)
• Greater perceived stress (p=.001)
• More depression symptoms (p<.001)
• Higher executive functioning score (p=.023)

Higher level of intrinsic motivation for change predicted:
• Lower overall cognition (p=.020)
• Lower scores on verbal fluency (p=.007)
• Lower episodic memory scores (p=.008)

Higher perceived stress was predicted by:
• Poorer overall health (p<.001)
• More depression symptoms (p<.001)
• Lower picture vocabulary score (p=.006)

Further research is needed to determine benefits of longer-term lifestyle intervention in increasing cognitive function.

IV. Conclusions

These results suggest that middle-aged people who score lower on cognitive testing may have the greatest motivation for change to lower AD risk.

Results of the study reveal specific correlations between factors of psychological well-being and cognitive status. Stress level and sleep quality significantly correlate with verbal fluency, short-term memory, and picture vocabulary; early warning signs for developing Alzheimer’s.

Further research is needed to determine benefits of longer-term lifestyle intervention in increasing cognitive function.