A multi-domain virtual cognitive health program reduces symptoms of depression and anxiety: six-month results from a single-arm longitudinal study

Nicholas T. Bott, PsyD, Shefali Kumar, MPH, Heidi Moseson, MPH, Jaspreet Uppal, MPH, Jennifer Tran, PharmD, Jordan M. Glenn, PhD, and Jessie L. Juusola, PhD

Background: The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER) is an in-person, longitudinal, multi-domain intervention focused on diet, exercise, cognitive training, and vascular risk monitoring. This study demonstrated that changes in behavioral risk factors could improve or maintain cognitive functioning and mental health in at-risk older individuals. As technology changes the way health services are delivered, virtual interventions can provide effective opportunities for delivering care. Neurotrack's Virtual Cognitive Health Program (VC Health) is a digitally delivered, 12-month, multi-domain intervention aimed at preventing or delaying cognitive decline and impairment in at-risk older adults. It consists of physical exercise, nutritional guidance, cognitive training, and social engagement supported by virtual coaching via telephone and email/text messaging. We conducted a 12-month intent-to-treat single-arm prospective study to evaluate the impact of VC Health on cognitive function and mental health.

Methods: Study participants were provided VC Health for the 12-month study period. Self-reported symptoms of depression (PHQ-9) and anxiety (GAD-7) were recorded at baseline, 3, 6, and 12 months. Sixty-nine adults between the ages of 60-75 endorsing self-reported subjective cognitive decline with worry were included in this six-month interim-analysis.

Results: Mean PHQ-9 and GAD-7 scores were 8.6(SD:4.8) and 6.2(SD:4.4) at baseline. At 6-months, significant decreases (p<0.001, measured by t-tests) were observed for PHQ-9 (5.5[SD:5.2]) and GAD-7 (3.9[SD:4.6]), resulting in reduction of 36% and 37%, respectively. A bivariate linear regression analysis revealed that the number of health coaching calls completed was associated with changes in PHQ-9 (beta=-0.33, p=0.01) and GAD-7 (beta=-0.29, p=0.03). The majority of study participants reported that VC Health helped improve their diet and eating habits (82.6%), physical activity (82.6%), subjective cognitive ability (87.0%), stress levels (63.8%), and sleeping habits (69.5%).

Conclusions: Results from this interim-analysis suggest that VC Health may improve symptoms of depression and anxiety in older adults with subjective cognitive decline, and higher program engagement may be related to greater improvement in symptoms. VC Health may also help improve behavioral factors associated with risk of cognitive decline. Longitudinal analysis will assess the sustainability of improvements in depression and anxiety symptoms, as well as the maintenance of healthy behaviors.