

# Behavioral intervention reduces depression and anxiety in adults with obesity

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Results from a pilot clinical trial show that among a racially and ethnically diverse cohort of adults who were obese and depressed, an integrated behavioral intervention was more effective than usual care at

reducing depression and associated anxiety symptoms than it was at promoting weight loss.

Using functional brain imaging, the University of Illinois Chicago researchers who led the study also found that among those participating in the intervention, neural processes involved in cognitive control changed and were predictive of [anxiety](#) symptom reductions.

While the UIC researchers think the timing of the trial—which overlapped with the initial phase of the COVID-19 pandemic from March to August 2020—may have impacted the weight loss results, they say the positive effects on [depression](#) and anxiety symptoms and correlation with specific neural processes are evidence of the effectiveness and potential underlying mechanism of the integrated behavioral intervention.

"The link between our brain and behavior is powerful, and this growing body of evidence shows us that whole-person, integrated behavioral therapy can offer hope for some of our most challenging health conditions—[obesity](#) and depression, for example, being both highly prevalent and notoriously tricky to treat," said study lead author Dr. Jun Ma, the Beth and George Vitoux Professor of Medicine and director of Vitoux Program on Aging and Prevention at the UIC College of Medicine.

A new paper in *Biological Psychiatry: Global Open Science* describes the findings of the study, which enrolled more than 100 people from UIC and its health system and randomly assigned them to receive either usual care or the intervention.

The majority of study participants were women (76%) around 47 years old, and more than two-thirds self-identified as Black (55%) or Latino (20%).

Participants who received usual care (35 participants) were advised to continue routine medical care and were provided with a summary of behavioral health and weight management services, as well as a wearable activity tracker. Participants who participated in the integrated behavioral intervention (71 participants) received therapy from a trained health coach and a weight loss video program. The therapy involved a seven-step problem-solving and behavioral activation strategy, delivered as first-line treatment, along with antidepressant medications as needed for depression management.

The weight loss video program was adapted from the highly successful Diabetes Prevention Program lifestyle intervention, which Ma previously demonstrated was effective in obese patients without depression. The integrated intervention is innovative because it combines problem-solving therapy and the weight loss video program, given that obesity is highly comorbid with depression and anxiety.

"Consistent with our hypothesis, we found that clinical improvements in anxiety were preceded by changes in activation and connectivity improvements in brain regions involved in emotion regulation and furthermore are targeted by treatments like repetitive transcranial stimulation and cognitive behavioral therapy," said Dr. Olusola Ajilore, associate professor of psychiatry and a co-first author of the study

Symptoms of depression were assessed with a 20-item symptom checklist and symptoms of anxiety through a seven-item scale, and weight was measured by research staff. Baseline results were compared with six-month results. Brain activity was measured with functional MRI in response to research standardized photos of threatening, sad or happy faces, for example, at baseline and two months.

A significantly higher percentage of participants in the intervention group compared with usual care group achieved remission of depressive

symptoms (43% vs. 22%) and anxiety symptoms (63% vs. 39%) at six months, but percentages of participants achieving 3% or 5% [weight loss](#) at six months did not differ significantly by group.

Anxiety score changes significantly correlated with brain activity changes in specific regions of the [prefrontal cortex](#) that are responsible for cognitive control, and the correlations differed between the intervention and usual care groups.

"Taken together, these and our previous results imply the potential for enhancing the innovative integrated behavioral intervention we developed with other treatment strategies targeted at the specific regions of the brain involved in cognition and emotion regulation in order to combat obesity and depression and anxiety," Ma said.

Leanne Williams of Stanford University is also a principal investigator and senior author of the study.

**More information:** Nan Lv et al, Mediating Effects of Neural Targets on Depression, Weight, and Anxiety Outcomes of an Integrated Collaborative Care Intervention: The ENGAGE-2 Mechanistic Pilot Randomized Clinical Trial, *Biological Psychiatry Global Open Science* (2022). [DOI: 10.1016/j.bpsgos.2022.03.012](https://doi.org/10.1016/j.bpsgos.2022.03.012)

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