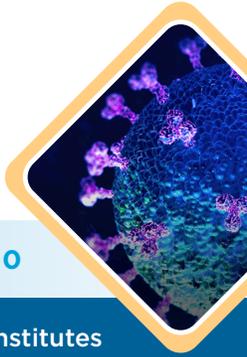


AN UNPRECEDENTED IMPACT

A SERIES OF FACT SHEETS ON COVID-19 AND BIOMEDICAL RESEARCH

SEPTEMBER 2020



We must maintain and strengthen our nation's investment in medical research through the National Institutes of Health. This is an urgent priority for Congress, as our nation works to restart stalled research, keep up with pressing public health challenges, continue to fight COVID-19 and prepare for the next potential pandemic.

PART 3 | PROGRESS ON HOLD | Researcher Profiles

While research on the disease caused by the novel coronavirus has been on a fast track the past several months, most other medical research ground to a halt in March and has yet to resume at anything near its pre-COVID pace. It is impossible to know the full implications of suspended work, lost experiments and delayed clinical trials, but for those waiting for a cure, time matters.



In March, when COVID-19 forced the University of Pennsylvania to put most ongoing research on hold, DR. ARIANA CHAO was just entering the final year of a pivotal three-year career development grant from NIH to study the impact of cognitive behavioral therapy on the brain function of people with binge eating disorder. The results from this study — now delayed — are key to her quest to become an independent researcher.

“I’m in the third year of my K23 and ideally I would be analyzing the data and using the results to support an independent research award,” Chao said. “But now, it’s much harder to recruit and my participant numbers are down.”

Ariana M. Chao, PhD, CRNP

Assistant Professor,
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An assistant professor in the Department of Biobehavioral Health Sciences at Penn Nursing, Chao aims to improve the efficacy of treatments for obesity and eating disorders. Today, some 80 million U.S. adults have obesity and little progress has been made in reducing the size of this problem, which carries with it the increased risk for numerous diseases, including diabetes, heart disease and certain cancers. Chao is using cognitive neuroscience to better understand the complexities of these conditions in order to identify predictors of outcomes — why some people respond to certain treatments and others don't — and ultimately, to guide the development and delivery of more effective, personalized interventions.

“We don’t know a lot about the neurocognitive mechanisms underlying obesity and binge eating. This is a major barrier to improving treatments. A better understanding of the biological bases of behavior can also help to predict how someone might respond to different treatments,” Chao explained.

In her clinical research, women with binge eating disorder (BED) and obesity are randomly assigned to either 16 weeks of one-on-one cognitive behavioral therapy (CBT) or a “waitlist”



OBSESITY AND HEALTH

- ✓ Almost **14 million children** and **80 million U.S. adults** have obesity
- ✓ From 2000 to 2018, obesity rates **increased** — from **30.5% to 42.4% in adults** and from **13.9% to 18.5% in children**
- ✓ Obesity is **associated with** the leading causes of death — including



diabetes



heart disease



stroke



certain cancers

as well as **mental illness, body pain, sleep apnea** and a **low quality of life**

UNPRECEDENTED IMPACT, *cont.*

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control group that receives CBT after 16 weeks. CBT helps patients learn new strategies to address disordered eating behaviors, as well as problematic thoughts related to eating, shape and weight. MRIs are conducted at the start of the trial and again after 16 weeks to assess changes in neural responses to food stimuli and the impact of CBT on those responses.

BINGE EATING DISORDER (BED)

- ✓ A severe, life-threatening and treatable eating disorder
- ✓ Characterized by recurrent episodes of eating large quantities of food; a feeling of a loss of control during the binge; experiencing shame, distress or guilt afterwards; and not using unhealthy compensatory measures to counter binge eating
- ✓ The most common eating disorder in the United States
- ✓ Affects about 3.5% of adult women, 2% of adult men and 1.6% of teenagers

Chao's research is supported by a K23 Mentored Patient-Oriented Research Career Development Award from the National Institute of Nursing Research, part of the NIH. This award is an important steppingstone toward an independent research career. Now in the last year of the three-year award, she is under pressure to produce results to support her continued research and career development and COVID-19 has disrupted this process.

“I’m in the third year of my K23 and ideally I would be analyzing the data and using the results to support an independent research award,” Chao said. “But now, it’s much harder to recruit and my participant numbers are down.”

While she was able to easily pivot the therapy component of her study to a virtual setting, Chao had to delay some of the MRIs that provide the comparative data on which her study depends. This hasn't simply delayed her data collection and analysis; it has added new complexities to it.

The women in the study continued to receive the behavioral therapy (or stay on the waitlist if they were stable) until MRI assessments could be safely resumed. So, depending upon when they started the process, a few women received up to 12 weeks of additional therapy instead of a consistent 16 weeks across participants. Additionally, the COVID pandemic introduced all kinds of new stressors to the lives of participants, which likely have had an impact on their behavior and eating disorder.

“Going remote actually made participation in therapy easier for some of these women who may have had difficulties attending in-person treatment,” Chao said. “The biggest challenge has been doing the MRI assessments and I’ll need to figure out how to factor in these other variables when we analyze our results.”

As of mid-July, she was back to conducting the MRI assessments and recruiting new study participants. However, social distancing and other COVID safety protocols were slowing her work significantly. The MRI machines are working at about 50 percent capacity due to the need to space appointments to allow for completion of cleaning protocols and for patients to come and go without encountering others. Additionally, recruitment is going much slower because the scans are conducted at a hospital, which makes some people nervous about participating at all, and because COVID has rendered some of their usual ways of recruiting — for instance, pamphlets in doctor office waiting rooms — ineffective.

Despite these obstacles and the delays to her work, Chao maintains an optimistic — and pragmatic — outlook on things. **“I’m taking things one day at a time. We’re using some new recruitment strategies and trying to get as much as possible done now since we don’t know what the future holds,” she said. “I’m hopeful, because of the mostly virtual nature of the treatment, that things will go well.”**