

# Study: Gender-affirming hormones improve mental health in transgender and nonbinary youth

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Transgender and nonbinary youth experienced significant improvement in appearance congruence (or the degree to which physical characteristics align with gender) and sustained improvements in depression and anxiety over two years after starting treatment with gender-affirming hormones, according to a multicenter U.S. study published in the *New England Journal of Medicine*.

"Our results provide robust scientific evidence that improved appearance congruence secondary to hormone treatment is strongly linked to better [mental health outcomes](#) in transgender and nonbinary [youth](#)," said lead author Diane Chen, Ph.D., pediatric psychologist with the Gender and Sex Development Program at Ann & Robert H. Lurie Children's Hospital of Chicago and Associate Professor at Northwestern University Feinberg School of Medicine. "This is critical, given that transgender youth experience more depression and anxiety, and are at a higher risk for suicidality than cisgender youth."

Many transgender or non-binary teens experience [gender dysphoria](#), or the persistent distress caused by the discrepancy between their [gender identity](#) and physical appearance. Gender-affirming hormones (testosterone or estradiol) are used as treatment to foster gender-congruent secondary sex characteristics, such as breast development or facial hair.

"The critical results we report demonstrate the positive psychological impact of gender-affirming hormones for treatment of youth with [gender dysphoria](#)," said senior author Johanna Olson-Kennedy, MD, Medical Director of the Center for Transyouth Health and Development at Children's Hospital Los Angeles. "Amidst a landscape of misinformation, we hope these findings support the use of timely and appropriate medical interventions for this vulnerable group of adolescents."

All the centers participating in the study employ a multidisciplinary team, comprising medical and [mental health providers](#), that collaboratively determines whether gender dysphoria is present and gender-affirming [medical care](#) is appropriate. For minors, parental consent is required to initiate medical treatment.

"The positive findings of this observational study match the lived clinical

experience of mental health experts who, in their many years of providing gender-affirming care, have repeatedly learned from the youth themselves about their [mental health](#)," said co-author Diane Ehrensaft, Ph.D., Director of Mental Health at the UC San Francisco Child and Adolescent Gender Center, and Professor of Pediatrics. "As the longitudinal study proceeds, we look forward to learning more from this cohort of patients—all of whom were screened carefully before beginning gender-affirming hormone treatment—about their journey going forward."

The study, the largest of its kind in the U.S., included 315 transgender and non-binary youth ages 12-20 years. Study visits occurred every six months for two years after treatment initiation, which is the longest follow-up reported to date. Researchers examined measures of appearance congruence, depression, anxiety, positive affect and life satisfaction.

They found that overall, appearance congruence, positive affect, and life satisfaction increased, while depression and anxiety symptoms decreased. Appearance congruence was associated with each psychosocial outcome assessed at baseline and during the follow-up period.

"Our results provide a strong scientific basis that gender-affirming care is crucial for the psychological well-being of our patients," said co-author Robert Garofalo, MD, MPH, Principal Investigator for the study at Lurie Children's, Co-Director of Lurie Children's Gender and Sex Development Program and Professor of Pediatrics at Northwestern University Feinberg School of Medicine. "We must ensure that access to this care remains available to youth with gender dysphoria."

**More information:** Diane Chen et al, *New England Journal of Medicine* (2023).

Provided by Ann & Robert H. Lurie Children's Hospital of Chicago

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