



Published in final edited form as:

*J Adolesc Health*. 2021 June ; 68(6): 1104–1111. doi:10.1016/j.jadohealth.2020.07.033.

## Psychosocial Characteristics of Transgender Youth Seeking Gender-Affirming Medical Treatment: Baseline Findings from the TYC Study

Diane Chen, PhD<sup>a,b,c,d</sup>, Mere Abrams, MSW<sup>e,f</sup>, Leslie Clark, PhD<sup>g,h</sup>, Diane Ehrensaft, PhD<sup>e,f</sup>, Amy C. Tishelman, PhD<sup>i,j,k</sup>, Yee-Ming Chan, MD, PhD<sup>i,j</sup>, Robert Garofalo, MD, MPH<sup>a,d</sup>, Johanna Olson-Kennedy, MD<sup>g,h</sup>, Stephen M. Rosenthal, MD<sup>e,f</sup>, Marco A. Hidalgo, PhD<sup>g,h</sup>

<sup>a</sup>Gender & Sex Development Program, Potocsnak Family Division of Adolescent and Young Adult Medicine, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL

<sup>b</sup>Pritzker Department of Psychiatry and Behavioral Health, Ann & Robert H. Lurie Children's Hospital of Chicago

<sup>c</sup>Department of Psychiatry and Behavioral Sciences, Northwestern University Feinberg School of Medicine, Chicago, IL

<sup>d</sup>Department of Pediatrics, Northwestern University Feinberg School of Medicine, Chicago, IL

<sup>e</sup>Child & Adolescent Gender Center, Benioff Children's Hospital, University of California, San Francisco

<sup>f</sup>Department of Pediatrics, Division of Pediatric Endocrinology, University of California San Francisco, San Francisco, CA

<sup>g</sup>Center for Transyouth Health and Development, Division of Adolescent and Young Adult Medicine, Children's Hospital Los Angeles, Los Angeles, CA

<sup>h</sup>Department of Pediatrics, Keck School of Medicine, University of Southern California, Los Angeles, CA

<sup>i</sup>Division of Endocrinology, Boston Children's Hospital, Boston, MA

<sup>j</sup>Harvard Medical School, Boston, MA

<sup>k</sup>Department of Psychiatry, Boston Children's Hospital, Boston, MA

### Abstract

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**Corresponding Author:** Diane Chen, PhD, 225 E. Chicago Ave, Box 161B, Chicago, IL 60611-2605; Phone: 312-227-2939; Fax: 312-227-9564; DiChen@luriechildrens.org.

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**Author Disclosure Statement:** The authors have no financial disclosures or conflicts of interest relevant to this article to disclose.

**Purpose:** To characterize two developmental cohorts of transgender and non-binary (TNB) youth enrolled in the Trans Youth Care (TYC) Network Study and describe their gender identity-related milestones and baseline mental health and psychosocial functioning.

**Methods:** TYC participants were recruited from four pediatric academic medical centers in the United States prior to initiating medical treatment for gender dysphoria either with (a) gonadotropin releasing hormone agonists (GnRHa) or (b) gender-affirming hormones (GAH). GnRHa cohort data were collected from youth and a parent; GAH cohort data were collected from youth only.

**Results:** A total of 95 youth were enrolled in the GnRHa cohort. Mean age was 11.22 years ( $SD=1.46$ ), and the majority were white (52.6%) and designated male at birth (51.6%). Elevated depression symptoms were endorsed by 28.6% of GnRHa cohort youth, and 22.1% endorsed clinically significant anxiety. About a quarter (23.6%) endorsed lifetime suicidal ideation, with 7.9% reporting a past suicide attempt. A total of 316 youth were enrolled in the GAH cohort. Mean age was 16.0 years ( $SD=1.88$ ), and the majority were white (62%) and designated female at birth (64.9%). Elevated depression symptoms were endorsed by 51.3% of the GAH cohort, and 57.3% endorsed clinically significant anxiety. Two-thirds (66.6%) endorsed lifetime suicidal ideation, with 24.6% reporting a past suicide attempt. Life satisfaction was lower amongst both cohorts compared to population-based norms.

**Conclusions:** GnRHa cohort youth appear to be functioning better from a psychosocial standpoint than GAH cohort youth, pointing to possible benefits of accessing gender-affirming treatment earlier in life.

## Keywords

gender dysphoria; gender diversity; gender expansive adolescents; gender-affirming hormones; pubertal suppression; gender-affirming care

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Gender dysphoria (GD) refers to affective distress stemming from incongruence between one's gender identity and their designated sex at birth. Over the last decade, youth with GD (including transgender (T) and non-binary (NB) youth) have been presenting in increasing numbers for medical treatment.<sup>1,2</sup> It is well-documented that TNB youth experience disproportionately high rates of depression, anxiety, suicidality, and non-suicidal self-injury.<sup>3-6</sup> A handful of studies suggest that gender-affirming medical treatment—i.e., gonadotropin releasing hormone agonists (GnRHa) and gender-affirming hormones (GAH)—reduces GD and improves overall mental health.<sup>7-11</sup> Most of these studies, however, were conducted in European clinics that initiate GnRHa or GAH at older ages, on average, than clinics in the United States (US) within a “watchful waiting” model in which children are discouraged from engaging in social gender transitions until adolescence.<sup>7-9</sup> Furthermore, two of these studies follow a single cohort of youth through different stages of treatment (i.e., GnRHa<sup>8</sup>; GAH and surgery<sup>9</sup>). Thus, it is not possible to isolate the effects of GAH on mental health from other medical and surgical interventions.

Only two studies have examined psychosocial outcomes of gender-affirming medical treatment among US-based youth. One describes a sample of 47 TNB youth seeking GAH;<sup>10</sup> the other examines a single cohort comprised of 148 youth receiving GAH and 25 youth

receiving GnRHa.<sup>11</sup> Thus, many questions remain regarding the psychosocial outcomes of early medical treatment for GD. Understanding these outcomes is especially important given the evolving standard of care which recommends initiating GnRHa shortly after the onset of puberty (Tanner 2) and recognizes the potential benefit of GAH prior to age 16 years.<sup>12</sup> Despite these guidelines, however, gender-affirming care remains contentious and is not universally accepted.<sup>13</sup>

In 2015, the National Institutes of Health (NIH) funded four pediatric academic medical centers to conduct a prospective, longitudinal study to provide a critical evidence base to inform medical treatment of youth GD.<sup>14</sup> These centers formed the Trans Youth Care (TYC) network and include Children's Hospital Los Angeles/University of Southern California, Ann & Robert H. Lurie Children's Hospital of Chicago/Northwestern University, Boston Children's Hospital/Harvard Medical School, and Benioff Children's Hospital/University of California San Francisco.<sup>14</sup> The current study characterizes two distinct cohorts of TNB youth enrolled in TYC (95 participants initiating GnRHa; 316 participants initiating GAH) and describes their baseline psychosocial functioning.

## Methods

### Participants and recruitment

TYC is an ongoing, multisite, observational study evaluating mental health, well-being, and metabolic/physiologic parameters in two developmental cohorts of TNB youth initiating medical treatment for GD as part of their clinical care either with (a) GnRHa administered for puberty suppression in early puberty (e.g., Tanner stage 2-3) (hereon, "GnRHa cohort") or (b) GAH (i.e., testosterone or estrogen) administered for phenotypic gender transition in later puberty (e.g., Tanner stage 4-5) (hereon, "GAH cohort") between July 2016 and September 2018. Eligibility for TYC enrollment included: (1) presence of GD as determined by a clinician, (2) appropriate and ready to initiate GnRHa or GAH as determined by the primary treatment team, (3) ages 8-20 years, (4) English proficiency, and (5) seeking services at one of the four study site clinics. The current study presents data on gender identity-related milestones, mental health and well-being, and gender-specific experiences. GnRHa cohort data were collected from youth and one parent; GAH cohort data were collected from youth only. A more comprehensive description of TYC study methods is published elsewhere.<sup>14</sup> Researchers received institutional review board approval from all study sites.

### Measures

**Demographics.** Both cohorts self-reported age, race/ethnicity, gender identity, and designated sex at birth. For gender identity, youth either selected from eight response options or indicated "other" and specified. Responses were recoded into three categories: transmasculine, transfeminine, and non-binary. Household income was estimated based on the median household income for participants' reported home zip code extracted from US Census data.

Gender development milestones. Both cohorts self-reported the age at which they first recognized there was something different about their gender, and responded “yes”/“no” to the item: “Are you living full time as your affirmed gender now?”

Mental health and well-being. Both cohorts completed the Revised-Children’s Manifest Anxiety Scale (RCMAS-2).<sup>15</sup> Forty-nine items were rated “yes”/“no”. “Yes” responses were summed and transformed into *T* scores for four scales: Total, Physiological, Worry, and Social Anxiety. *T* scores >60 were considered clinically significant.

GnRHa cohort youth completed the 20-item Beck Depression Inventory for Youth (BDI-Y)<sup>16</sup> to assess presence and severity of depressive symptoms. Each item was rated on a 4-point scale. Scores were summed and compared to standardized cutoffs reflecting minimal, mild, moderate, or severe depression. GAH cohort youth completed the 21-item Beck Depression Inventory-II (BDI-II).<sup>17</sup> Each item was rated on a 4-point scale. Similar to the BDI-Y, scores were summed and compared to standardized cutoffs reflecting minimal, mild, moderate, or severe depression.

Both cohorts completed up to six “yes”/“no” items pertaining to lifetime and recent (i.e., past 6 months) suicidal ideation (SI), SI with plan, and suicide attempts. Sample items include: “Have you ever thought about killing yourself?” and “Have you thought about killing yourself in the last 6 months?” Participants were asked about suicidality in the past 6 months only if they endorsed corresponding lifetime items.

Life satisfaction was assessed in both cohorts using the General Life Satisfaction measure from the NIH Toolbox - Emotion Battery.<sup>18</sup> Ratings for the GnRHa cohort were collected by parent proxy because this measure is available only as a parent proxy-report for youth ages 3-12 years. GAH cohort youth completed a self-report version. Sample items are “My child’s life is going well.” (parent proxy) and “My life is going well.” (youth self-report). For both versions, raw scores were summed and converted to *T* scores, with higher scores indicating greater life satisfaction.

Gender-specific experiences. Both cohorts completed the 22-item Body Esteem Scale for Adolescents and Adults (BES).<sup>19</sup> Items assess general perceptions about appearance (“I’m pretty happy with the way I look.”), weight (“I am satisfied with my weight.”), and how others view one’s body or appearance (“Young people my age like my looks.”). Each item was rated on a 4-point scale and summed, with higher scores indicating greater body esteem.

The GAH cohort completed the Body Image Scale (BIS).<sup>20</sup> Youth rated their satisfaction with 30 body parts on a 5-point scale from “very satisfied” to “very dissatisfied”. Mean scores were calculated to reflect overall body image and three subscales: primary sex characteristics (e.g., penis/vagina), secondary sex characteristics (e.g., hips), or neutral (i.e., hormonally unresponsive) body parts (e.g., nose). Higher scores reflect greater body dissatisfaction.

GAH cohort youth completed the Transgender Congruence Scale (TCS),<sup>21</sup> a 12-item measure of comfort related to gender identity and appearance. Each item was rated on a 5-point scale and averaged to reflect two subscales: appearance congruence (9 items; e.g., “My

outward appearance represents my gender identity.”) and identity acceptance (3 items; e.g., “I am happy that I have the gender identity that I do.”). A total congruence score was also calculated. Higher scores reflect greater congruence/acceptance.

GAH cohort youth completed the Gender Minority Stress and Resilience Measure for Adolescents<sup>22</sup> (GMSR-A) assessing social stigma and psychosocial resilience related to gender minority identity. The GMSR-A is comprised of nine subscales, six of which were employed in this study. Included were four minority stress subscales (i.e., gender identity non-affirmation; internalized transphobia; negative expectations for the future; non-disclosure of gender identity/history) and two resilience subscales (i.e., pride in being a gender minority individual; community connectedness). Items were rated on a 5-point scale. Sample items include “People don’t respect my gender identity because of my appearance or body” (non-affirmation), “If I express my gender history, I could be a victim of crime or violence” (non-disclosure), “It is a gift that my gender identity is different from my designated sex at birth” (pride), and “I feel connected to other people who share my gender identity” (community connectedness). Subscale item responses were summed, with higher scores indicating greater minority stress or resilience. Statistical Analysis

Descriptive statistics are reported for all variables. Means (M) and standard deviations (SD) summarize continuous variables; frequencies and percentages summarize categorical variables. Counts and scale scores for variables reflecting demographics, gender development milestones, mental health outcomes and gender-specific experiences were compared using  $\chi^2$  tests for categorical measures and independent samples *t* tests for continuous measures. Instead of  $\chi^2$  tests, Fisher’s Exact Probability Test was conducted for any dichotomous comparisons involving a cell frequency of less than 5.

## Results

### GnRHa Cohort

A total of 95 youth comprised the GnRHa cohort (Table 1). Youth were 11.2 years on average (range 8-16, *SD*=1.46), and the cohort was majority white (52.6%) and designated male at birth (51.6%). Almost half (47.4%) reported a gender identity on the female spectrum (i.e., transfeminine), 43.2% reported a gender identity on the male spectrum (i.e., transmasculine), and 9.5% reported a non-binary gender identity. Youth designated male at birth were older than youth designated female at birth,  $t(93) = 3.11$ ,  $p=.002$ . Average estimated household income was \$85,585 (*SD* = \$31,743).

Youth recognized their gender was different than their sex designation at age 6.4 years on average (*SD*=3.35); this age did not differ by designated sex at birth,  $t(87) = 0.630$ ,  $p=0.53$ . The majority (74.7%) were living full-time in their affirmed gender, and this also did not differ by designated sex at birth,  $\chi^2(1) = 0.86$ ,  $p=.77$ .

Table 2 depicts mental health, well-being, and gender-specific experiences for the GnRHa cohort. Elevated depression was endorsed by 28.6%, and nearly a quarter (23.6%) endorsed lifetime SI, with 7.9% endorsing a past attempt. Just over one-fifth of the cohort scored in the clinical range for total anxiety (22.1%); 16.8% endorsed clinical-range physiological

anxiety, 21.1% endorsed clinical-range worry, and 15.8% endorsed clinical-range social anxiety. Life satisfaction was lower than reported for the general population. There were significant differences in anxiety scores based on designated sex at birth, with youth designated male at birth reporting both greater total anxiety,  $t(82) = 2.020, p = .047$ , and worry,  $t(82) = 2.226, p = .029$ , than youth designated female at birth, but there were no differences in depression, life satisfaction, or suicidality (lifetime or recent) by sex designation. Youth reported levels of body-esteem ( $M=45.78, SD=10.80$ , range 19-68) in the “moderate” range, and there were no significant differences by designated sex at birth.

### GAH Cohort

A total of 316 youth comprised the GAH cohort, the vast majority (93%) of whom were naive to gender-affirming medical treatment; i.e., 7% had a history of GnRHa treatment. GAH cohort youth were 16.0 years on average (range 11-20,  $SD=1.88$ ), with the majority white (62%) and designated female at birth (64.9%). Sixty percent of youth reported a transmasculine gender identity, 34% a transfeminine gender identity, and 6% reported a non-binary gender identity. There were no differences in age or racial/ethnic background by designated sex at birth (Table 1). Average estimated household income was \$81,697 ( $SD = \$29,879$ ).

GAH cohort youth recognized they were a gender different than their sex designation at age 10.7 years on average ( $SD=4.16$ ), which did not differ by designated sex at birth,  $t(179.54) = -0.69, p=0.49$ . The majority (80.4%) were living full-time in their affirmed gender, with a significantly greater proportion of youth designated female at birth living in their affirmed gender (88.3%) compared to youth designated male at birth (65.8%),  $\chi^2(1) = 24.42, p < .000$ .

Table 3 depicts mental health, well-being, and gender-specific experiences for the GAH cohort. More than half of the youth endorsed elevated depression. Two-thirds (66.6%) endorsed lifetime SI, with 24.6% endorsing a past suicide attempt. Over half the cohort scored in the clinical range for total anxiety (57.3%), with 35.1% endorsing clinical-range physiological anxiety, 60.4% endorsing clinical-range worry, and 47.5% endorsing clinical-range social anxiety. Life satisfaction was over a standard deviation lower than the general population. There were no differences in depression, anxiety, life satisfaction, or recent suicidality based on designated sex at birth. In terms of lifetime suicidality, there were no differences in SI and SI with plan by designated sex at birth; however, a significantly greater proportion of youth designated female at birth had a past suicide attempt (19.7%) compared to youth designated male at birth (4.9%),  $\chi^2(1) = 12.01, p = .001$ .

GAH cohort youth had low levels of body esteem ( $M=36.0, SD=9.1$ , range 17-67). In terms of body image, youth were most dissatisfied with their primary sex characteristics, followed by secondary sex characteristics and hormonally-unresponsive “neutral” body parts. Youth endorsed high levels of identity acceptance and low levels of appearance congruence. There were no significant differences in BES and TCS scores by designated sex at birth, but there were significant differences on some BIS and GMSR-A subscales. Specifically, youth designated male at birth were significantly more dissatisfied with “neutral” body parts compared to youth designated female at birth,  $t(311) = 3.34, p = 0.001$ . In terms of minority stress, youth designated female at birth experienced more non-affirmation of gender identity



compared to youth designated male at birth,  $t(306) = -2.34, p=0.02$ . Youth designated female at birth also endorsed more non-disclosure compared to youth designated male at birth,  $t(185.63) = -4.52, p=0.000$ . Regarding resilience, youth designated male at birth expressed more identity-related pride than youth designated female at birth,  $t(308) = 3.19, p=0.002$ . There were no differences in overall satisfaction with primary or secondary sexual characteristics, internalized transphobia, negative expectations for the future or community connectedness by designated sex at birth.

### Cross-cohort comparisons

In comparing the two cohorts, GnRHa cohort youth appear to be functioning better from a psychosocial standpoint than GAH cohort youth. A smaller proportion of GnRHa cohort youth endorsed elevated rates of depression (28.6%) and lifetime suicidality (23.6%) compared to GAH cohort youth (51.3% and 66.6%, respectively). Similarly, average anxiety scores among GnRHa cohort youth are either below or just above the population average, whereas among GAH cohort youth, average anxiety scores are one half to a full standard deviation higher than population averages. Furthermore, a much larger proportion of GAH cohort youth endorsed clinically significant total anxiety (57.3%) and worries (60.4%) compared to GnRHa cohort youth (22.1% and 21.1%, respectively). It is also notable that life satisfaction was, on average, lower amongst both the GnRHa and GAH cohorts compared to population-based norms; however, youth in the GAH cohort reported relatively lower life satisfaction. GAH cohort youth also reported lower body esteem, on average, than GnRHa cohort youth.

### Discussion

This study examined baseline mental health, well-being, and gender-specific experiences among two TYC cohorts: youth initiating GnRHa and youth initiating GAH treatment. GnRHa cohort youth recognized their gender as different from their designated sex at birth, on average, at an age approximately four years younger than GAH cohort youth and were able to access gender-affirming medical treatment earlier in development. It is possible that early access to medical treatment, which prevents an unwanted puberty in the GnRHa cohort, alleviates psychological distress and accounts for the better picture of mental health and well-being in the GnRHa cohort compared to the GAH cohort. Additionally, it may be that access to GnRHa treatment for prevention of endogenous pubertal changes is a proxy for parental support, a factor that is well-known to be protective.<sup>23</sup> It is also possible that differences in mental health functioning between the two cohorts reflect the older average age of onset for depression and anxiety more broadly. In general, mental health findings in the GAH cohort are consistent with the relatively high rates of depression, anxiety, and suicidality reported in previous studies,<sup>3,24,25</sup> whereas GnRHa cohort youth findings are consistent with those from other studies of younger transgender youth where, in the majority of cases, internalizing symptoms were close to average and below the clinically significant range.<sup>26</sup>

In the GAH cohort, youth designated female at birth attempted suicide at significantly higher rates (19.7%) than youth designated male at birth (4.9%), consistent with past research

documenting higher rates of attempted suicide among transmasculine versus transfeminine youth.<sup>4</sup> It is notable that youth in our sample endorsed lower rates of past suicide attempt compared to rates reported by transgender youth from a population-based survey (transmasculine: 50.8%; transfeminine: 29.9%).<sup>4</sup> Lower suicide attempt rates in our sample may reflect a buffering effect of parental support, as the majority of youth in the GAH cohort were accessing medical treatment for gender affirmation as minors. These lower rates may also reflect a changing environment that is more accepting of transgender experiences, especially within the four urban areas represented in this study. Despite this being a lower rate than previously documented, a 24.6% suicide attempt rate is still 4-5 times higher than the adolescent population at large.<sup>27</sup> Disproportionate suicidality in TNB adolescents may reflect high rates of discrimination, rejection, and non-affirmation experienced inside or outside the home.<sup>28</sup>

In terms of minority stress, GAH cohort youth designated female at birth experienced significantly more external (non-affirmation) and internal (non-disclosure) stressors and significantly lower resilience (identity pride) compared to youth designated male at birth. It is possible that these differences by designated sex at birth reflect differences in socialization practices. For instance, being socialized as female within US culture may sharpen transmasculine youths' attention to social and affective responses in others.<sup>29,30</sup> Similarly, transfeminine youths' greater sense of pride may reflect previous male socialization, as past studies have indicated a gender difference in imbued self-assertiveness and confidence.<sup>31</sup>

Specific to body image, greater dissatisfaction with "neutral sex characteristics" was reported by GAH cohort youth designated male at birth. This is likely because this domain included body parts responsive to testosterone exposure (e.g., Adam's apple; face; shoulders) and thus were not truly "neutral." The categorization of hormonally-responsive body parts in such a subscale underscores a need for re-analyzing the factor structure of the BIS among TNB youth, which some research teams have already started to explore.<sup>32,33</sup>

In the last several decades, research examining health and well-being among TNB youth has largely focused on GD, its psychiatric sequelae and outcomes related medical interventions. Findings from studies of this kind have certainly informed and advanced the treatment of GD in youth. However, TNB youth present for medical care with a range of cultural perspectives, having experienced varying levels of support, acceptance, and understanding from family, peers, local community, and society at large. Therefore, the evaluation of gender-affirming medical treatments on psychosocial well-being among TNB youth must account for the dynamic set of factors relevant to gender health, all of which have the potential to influence mental health, gender dysphoria, body esteem, overall life satisfaction, and levels of gender minority stress. Our findings suggest that baseline gender-related and psychosocial factors are important to consider in developing longitudinal models aiming to account for the effects of early medical intervention to treat GD in TNB youth enrolled in studies such as TYC. With these findings in mind, adolescent TNB health research may extend beyond GD to also examine variables associated with gender health and identity development. This model of gender health is likely multifaceted, including the assessment of individual factors such personal identity, body image and esteem, as well as ecological



variables such as social support and community connectedness, interpersonal interactions, and sociocultural norms.

With 10% of youth in the GnRH<sub>a</sub> cohort and 6% of youth in the GAH self-reporting a non-binary gender identity at baseline, it is evident that non-binary gender identities need to be included in research about gender-affirming interventions. As has been suggested, core sense of self, gender dysphoria, body esteem, and social experience may differ between non-binary and binary transgender youth.<sup>34</sup> A model for understanding the gender health, gender-related distress, and goals for gender affirmation of youth across the entire gender spectrum is critical for further advancing the field of adolescent TNB health.

Limitations of our study include the relative lack of racial/ethnic diversity, as the majority of youth were white across both cohorts. It is possible that youth embodying multiple marginalized and minoritized identities may be at greater risk for poor mental health functioning. Also, this study focuses on individual mental health functioning and gender-specific experiences. Factors not directly addressed, including parental and peer support and community acceptance more broadly, are likely to affect mental health and well-being and can be explored in future research with TYC data. Additionally, it is possible that there are site-specific differences in youth mental health functioning owing to differing political and cultural climates in Boston, Chicago, Los Angeles, and San Francisco—this also can be explored in future research. Last, the current study was cross-sectional in nature, so while it provides an important snapshot of baseline functioning in TNB youth seeking medical care, it does not answer key questions related to treatment outcomes.

While findings from this baseline analysis of youth seeking gender affirming services demonstrate better mental health and well-being among younger patients seeking pubertal suppression, there are still significant concerns about these vulnerable youth, particularly those who are further along in their pubertal development seeking GAH treatment. Longitudinal follow-up of these cohorts as they embark on their interventions will be critical to understanding the impact of medical care on mental health and well-being. Findings from the TYC study have the potential to significantly advance evidence-based practice for TNB youth and justify the need for gender-affirming care.

### **Acknowledgements:**

This work was supported by R01HD082554 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). Study sponsors had no role in (a) study design, (b) collection, analysis, and interpretation of data, (c) writing of the report, or (d) the decision to submit the manuscript for publication.

### **Abbreviations:**

<b>BDI-II</b>	Beck Depression Inventory-II
<b>BDI-Y</b>	Beck Depression Inventory for Youth
<b>BES</b>	Body Esteem Scale
<b>BIS</b>	Body Image Scale

<b>GAH</b>	Gender-affirming Hormones
<b>GD</b>	Gender Dysphoria
<b>GMSR-A</b>	Gender Minority Stress and Resilience Measure for Adolescents
<b>GnRH<math>\alpha</math></b>	Gonadotropin-releasing Hormone Agonists
<b>M</b>	Mean
<b>NB</b>	Non-binary
<b>NIH</b>	National Institutes of Health
<b>RCMAS-2</b>	Revised-Children's Manifest Anxiety Scale
<b>SD</b>	Standard Deviation
<b>SI</b>	Suicidal Ideation
<b>T</b>	Transgender
<b>TCS</b>	Transgender Congruence Scale
<b>TNB</b>	Transgender/Non-binary
<b>TYC</b>	Trans Youth Care
<b>US</b>	United States

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### **Implications and Contribution**

Youth presenting for medical treatment of gender dysphoria at earlier developmental stages (i.e., early versus late puberty) endorse lower rates of depression, anxiety, and suicidality, and higher body esteem and life satisfaction. This highlights the need to improve access to early medical treatment to attenuate mental health risk.

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**Table 1.**

## Demographic Characteristics Based on Designated Sex at Birth

GnRHa Cohort (N=95)					
	Total Sample	Designated Female at Birth	Designated Male at Birth	<i>t</i> or $\chi^2$ (df)	<i>p</i> -value
Total n (%)	95	46 (48.4)	49 (51.6)		
Age <i>M</i> ( <i>SD</i> )	11.22 (1.46)	10.76 (1.43)	11.65 (1.36)	3.11 (93)	.002
Gender Identity					
Transmasculine/Male	41 (43.2)	40 (87)	1 (2) <sup>+</sup>	78.28 (2)	0.000
Transfeminine/Female	45 (47.4)	1 (2.2) <sup>+</sup>	44 (89.8)		
Non-binary	9 (9.5)	5 (10.9)	4 (8.2)		
Race/Ethnicity					
White	50 (52.6)	31 (67.4)	19 (38.8)	10.01 (5)	.075
Latinx	21 (22.1)	8 (17.4)	13 (26.5)		
Black/African-American	3 (3.2)	1 (2.2)	2 (4.1)		
Multiracial	13 (13.7)	5 (10.9)	8 (16.3)		
Other	4 (4.2)	-	4 (8.2)		
Unreported	4 (4.2)	102	3 (6.1)		
GAH Cohort (N=316)					
	Total Sample	Designated Female at Birth	Designated Male at Birth	<i>t</i> or $\chi^2$ (df)	<i>p</i> -value
Total n (%)	316	205 (64.9)	111 (35.1)		
Age <i>M</i> ( <i>SD</i> )	16 (1.88)	15.87 (1.76)	16.23 (2.08)	1.57 (195.29)	0.12
Gender Identity					
Transmasculine	191 (60.4)	191 (93.72)	-	293.64 (2)	0.000
Transfeminine/Female	106 (33.5)	1 (0.5) <sup>+</sup>	105 (94.6)		
Non-binary	19 (6.0)	13 (6.3)	6 (5.4)		
Race/Ethnicity					
White	196 (62.0)	127 (62.0)	69 (62.2)	2.17 (4)	0.71
Latinx	70 (22.2)	49 (23.9)	21 (18.9)		
Black/African-American	14 (4.4)	10 (4.9)	4 (3.6)		
Multiracial	10 (3.2)	5 (2.4)	5 (4.5)		
Other	23 (7.3)	14 (6.8)	9 (8.1)		
Unknown/unreported	3 (0.9)	-	3 (2.7)		

Note. GnRHa = gonadotropin releasing hormone agonists. GAH = gender-affirming hormones. *M* = mean; *SD* = standard deviation

<sup>+</sup> Participant's designated sex at birth was concordant with their reported gender identity at the point of baseline.



**Table 2.**

GnRHa Cohort Mental Health, Well-Being, and Gender-specific Experiences Based on Designated Sex at Birth

GnRHa Cohort (N=95)					
	Total Sample	Designated Female at Birth	Designated Male at Birth	<i>t</i> or $\chi^2$ (df)	<i>p</i> -value
Beck Depression Inventory-Y (n=91) n (%)					
Minimal Depression	65 (71.4)	32 (74.4)	33 (68.8)	1.14 (3)	0.767
Mild Depression	9 (9.9)	4 (9.3)	5 (10.4)		
Moderate Depression	10 (11.0)	5 (11.6)	5 (10.4)		
Severe Depression	7 (7.7)	2 (4.7)	5 (10.4)		
Revised Children's Manifest Anxiety Scale 2 (n=84) <i>M</i> ( <i>SD</i> )					
Total Anxiety T-score	48.37 (12.75)	45.67 (11.65)	51.2 (13.38)	2.02 (82)	0.047*
Physiological Anxiety T-score	47.27 (11.42)	45.49 (10.6)	49.15 (12.07)	1.48 (82)	0.143
Worry T-Score	50.08 (12.80)	47.11 (11.57)	53.2 (13.42)	2.23 (82)	0.029*
Social Anxiety T-score	47.65 (11.88)	45.53 (10.57)	49.88 (12.87)	1.69 (82)	0.094
NIH Toolbox Life Satisfaction T-Score - Parent Report (n=94) <i>M</i> ( <i>SD</i> )	45.91 (11.23)	45.97 (9.61)	45.85 (12.64)	-0.05 (88.983)	0.959
Lifetime SI (n=89) <sup>^</sup>					
No	68 (76.4)	35 (39.3)	33 (37.1)	2.12 (1)	0.146
Yes	21 (23.6)	7 (7.9)	14 (15.7)		
Lifetime SI with plan (n=21) <sup>^</sup>					
No	13 (14.6)	4 (4.5)	9 (10.1)	0.10 (1)	1.000
Yes	8 (8.9)	3 (3.4)	5 (5.6)		
Lifetime Suicide Attempt (n=18) <sup>^</sup>					
No	11 (12.4)	3 (3.4)	8 (44.4)	0.42 (1)	1.000
Yes	7 (7.9)	1 (1.1)	6 (33.3)		
Past 6 months SI (n=20) <sup>^</sup>					
No	8 (8.9)	3 (3.4)	5 (5.6)	0.36 (1)	0.642
Yes	12 (13.5)	3 (3.4)	9 (10.1)		
Past 6 months SI with plan (n=8) <sup>^</sup>					
No	4 (4.5)	2 (2.2)	2 (2.2)	0.53 (1)	1.000
Yes	4 (4.5)	1 (1.1)	3 (3.4)		
Past 6 months Suicide Attempt (n=8) <sup>^</sup>					
No	6 (6.7)	2 (2.2)	4 (4.5)	0.89 (1)	1.000
Yes	2 (2.2)	-	2 (2.2)		
Body Esteem Scale (n=91) <i>M</i> ( <i>SD</i> )					

<b>GnRHa Cohort (N=95)</b>					
	<b>Total Sample</b>	<b>Designated Female at Birth</b>	<b>Designated Male at Birth</b>	<b><i>t</i> or <math>\chi^2</math> (df)</b>	<b><i>p</i>-value</b>
Total Scale Score	45.78 (10.80)	45.53 (11.74)	46.01 (9.97)	0.30 (89)	0.834

Note. GnRHa = gonadotropin releasing hormone agonists. *M* = mean; *SD* = standard deviation

\*  $p < 0.05$

^ percentages do not add up to 100% due to N/A responses due to preprogrammed skip patterns.

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**Table 3.**

## GAH Cohort Mental Health, Well-Being, and Gender-Specific Experiences Based on Designated Sex at Birth

GAH Cohort (N=316)					
	Total Sample	Designated Female at Birth	Designated Male at Birth	<i>t</i> or $\chi^2$ (df)	<i>p</i> -value
Beck Depression Inventory-II (n=308) n (%)					
Minimal Depression	150 (48.7)	101 (50.8)	49 (44.9)	2.83 (3)	0.419
Mild Depression	53 (17.2)	35 (17.6)	18 (16.5)		
Moderate Depression	57 (18.5)	37 (18.6)	20 (18.3)		
Severe Depression	48 (15.6)	26 (13.1)	22 (20.2)		
Revised Children's Manifest Anxiety Scale 2 (n=309) <i>M</i> ( <i>SD</i> )					
Total Anxiety T-score	59.97 (11.50)	40.32 (11.52)	59.12 (11.47)	-0.96 (307)	0.340
Physiological Anxiety T-score	55.10 (11.01)	55.66 (11.51)	54.05 (9.99)	-1.22 (307)	0.223
Worry T-Score	61.72 (11.66)	61.89 (11.53)	61.41 (11.94)	-0.35 (307)	0.729
Social Anxiety T-score	58.05 (11.07)	58.41 (10.74)	57.36 (11.69)	-0.80 (307)	0.729
NIH Toolbox Life Satisfaction T Score (n=313) <i>M</i> ( <i>SD</i> )	39.82 (10.89)	40.37 (9.18)	38.82 (13.47)	-1.07 (165.09)	0.285
Lifetime SI (n=305) <sup>^</sup>					
No	102 (33.4)	67 (22.0)	35 (11.5)	0.001 (1)	0.977
Yes	203 (66.6)	133 (43.6)	70 (23.0)		
Lifetime SI with plan (n=204) <sup>^</sup>					
No	115 (37.7)	70 (23.0)	45 (14.8)	1.70 (1)	0.192
Yes	89 (29.1)	62 (20.3)	27 (8.9)		
Lifetime Suicide Attempt (n=207) <sup>^</sup>					
No	132 (43.3)	74 (24.3)	58 (19.0)	12.01 (1)	0.001*
Yes	75 (24.6)	60 (19.7)	15 (4.9)		
Past 6 months SI (n=207) <sup>^</sup>					
No	99 (32.5)	69 (22.6)	30 (9.8)	1.35 (1)	0.246
Yes	108 (35.4)	67 (22.0)	41 (13.4)		
Past 6 months SI with plan (n=89) <sup>^</sup>					
No	57 (18.7)	42 (13.8)	15 (4.9)	1.21 (1)	0.271
Yes	32 (10.5)	20 (6.6)	12 (3.9)		
Past 6 months Suicide Attempt (n=74) <sup>^</sup>					
No	63 (20.7)	50 (16.4)	13 (4.3)	0.04 (1)	0.852
Yes	11 (3.6)	9 (3.0)	2 (0.7)		
Body Esteem Scale <i>M</i> ( <i>SD</i> )					
Total Scale Score	36.01 (9.13)	35.88 (8.19)	36.23 (10.71)	0.30 (177.40)	0.765
Body Image Scale <i>M</i> ( <i>SD</i> )					

GAH Cohort (N=316)					
	Total Sample	Designated Female at Birth	Designated Male at Birth	<i>t</i> or $\chi^2$ (df)	<i>p</i> -value
Total Scale Score	3.24 (0.80)	3.19 (0.72)	3.33 (0.93)	1.39 (174.45)	0.167
Primary Sexual Characteristics	4.44 (0.73)	4.39 (0.72)	4.53 (0.74)	1.44 (302)	0.152
Secondary Sexual Characteristics	3.10 (0.84)	3.09 (0.77)	3.12 (0.97)	-0.22 (178.94)	0.825
Neutral (Hormonally Unresponsive)	2.71 (0.79)	2.60 (0.70)	2.93 (0.90)	3.34 (311)	0.001 <sup>*</sup>
Transgender Congruence Scale <i>M</i> ( <i>SD</i> )					
Total Scale Score	2.82 (0.75)	2.85 (0.68)	2.78 (0.85)	-0.81 (185.78)	0.422
Appearance Congruence Subscale	2.37 (0.88)	2.42 (0.78)	2.27 (1.03)	-1.38 (178.18)	0.170
Identity Acceptance Subscale	4.20 (0.86)	4.14 (0.87)	4.30 (0.85)	1.55 (308)	0.123
Gender Minority Stress and Resilience					
Non-affirmation of Gender Identity	15.17 (6.18)	15.78 (5.86)	14.07 (6.60)	-2.34 (306)	.020 <sup>*</sup>
Internalized Transphobia	13.23 (8.49)	13.49 (8.23)	12.77 (8.97)	-0.71 (309)	0.478
Negative Expectations for the Future	19.09 (8.41)	19.41 (8.09)	18.49 (8.98)	-0.92 (307)	0.358
Non-disclosure	13.71 (4.99)	14.66 (4.51)	11.97 (5.41)	-4.52 (185.63)	0.000 <sup>*</sup>
Pride	17.50 (8.05)	16.43 (8.05)	19.43 (7.72)	3.19 (308)	0.002 <sup>*</sup>
Community Connectedness	13.56 (3.98)	13.58 (3.93)	13.39 (4.12)	-0.40 (306)	0.691

Note. GAH = gender-affirming hormones. *M* = mean; *SD* = standard deviation

<sup>\*</sup> *p* < 0.05.

<sup>^</sup> percentages do not add up to 100% due to N/A responses due to preprogrammed skip patterns.