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Gender Dysphoria in Pediatric and Transitional-Aged Youth Hospitalized for Suicidal Behaviors:

A Cross-National Inpatient Study

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ABSTRACT

Objective: Our study aims to demarcate the sociodemographic differences in pediatric patients hospitalized for suicidal behaviors and struggling with gender dysphoria. Additionally, we evaluated the demographic factors and comorbidities that are predictive of gender dysphoria in patients with suicidal behaviors.

Methods: We included 319,430 patients (aged 6–24 years) with suicidal behaviors and a primary psychiatric diagnosis (per *ICD-10* criteria) of mood disorders (depressive disorders, 75.3%; bipolar disorders, 15.9%; and other mood disorders, 8.8%) from the Nationwide Inpatient Sample (2018–2019). We compared the distributions of categorical variables using the Pearson χ^2 test and continuous variables using an independent-samples *t* test in inpatients without versus with gender dysphoria. We used a logistic regression model to calculate the odds ratio (OR) to assess the demographic and comorbid characteristics of gender dysphoria with suicidal behaviors.

Results: The prevalence of codiagnosis of gender dysphoria in inpatients hospitalized for suicidal behaviors was 1.5%. Gender dysphoria was seen in a higher proportion of adolescents (68.2%), females (73.6%), those from high-income families (51.7%), and those from metropolitan counties (88.8%). The prevalent psychiatric comorbidities in inpatients with gender dysphoria included anxiety disorders (63.6%), posttraumatic stress disorder (PTSD; 28.2%), and neurodevelopmental disorders (27.4%). Comorbidities including somatic disorders (OR = 2.30), eating disorders (OR = 1.95), obsessive-compulsive disorder (OR = 1.71), anxiety disorders (OR = 1.59), PTSD (OR = 1.32), and neurodevelopmental disorders (OR = 1.17) increased the likelihood of codiagnoses of gender dysphoria.

Conclusions: There exists a high prevalence of psychiatric comorbidities in those with gender dysphoria and hospitalized for suicidal behavior. Our findings call for prompt evaluations of comorbidities of suicidal behaviors among adolescents and youth with gender dysphoria to provide a coordinated approach to suicide prevention, thereby reducing the future risk of poor health outcomes and mortality.

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Suicide is a major area of public health concern and is the second leading cause of death among the pediatric population (aged 10–14 years) and transitional-aged youth (TAY, aged 15–24 years) in the US.[1] Also, youth aged 10–24 years have a higher number of emergency department (ED) visits for self-harm (342.5 per 100,000) than people aged 25 years and older (121.9 per 100,000). Non-Hispanic American Indian/Alaskan individuals are more at risk of suicide with 33.0 per 10,00,000.[1] Past studies[1,2] have found that girls report more suicide attempts and suicide ideation than boys.

Gender identity refers to an individual's sense of themself as male, female, transgender, or something else. *Transgender* is an umbrella term for people whose gender identity and expression are different from cultural expectations based on the sex they were assigned at birth.[3] There is a dearth of population-based studies on the prevalence of gender identity disorder, which are primarily based on small clinical samples. However, in the youth risk behavior survey (YRBS, 2017),[4] 1.8% of high school students identified themselves as transgender in 10 US states and 9 urban school districts. Similar findings on the prevalence of transgender identity among adolescents were reported in past studies.[5,6] There is an increase in evidence that transgender youth are more likely to develop mental health disorders than heterosexual peers. According to a survey,[7,8] transgender youth are 4 times more likely to experience depression than their non-transgender peers. Also, the severity of depression symptoms is significantly higher in lesbian, gay, bisexual, and queer (LGBQ) teens than in heterosexual peers.[9] The US transgender survey (USTS) in 2015[10] showed that 40% of transgender adults had attempted suicide during their lifetime compared to less than 5% of the US population. In addition, the sexual minority adolescents had a higher lifetime prevalence of suicide ideation (26.1% vs 13.0%), plan (16.6% vs 5.4%), and attempt (12.0% vs 5.4%) than heterosexual adolescents.[10]

There are disparities in the psychiatric and physical health of transgender youths compared to their peers. A review of various research has shown that transgender youth have higher rates of depression, suicidality, self-harm, and substance abuse than their

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Clinical Points

- Adolescents and transitional-aged youth with gender dysphoria need periodic psychiatric screening for early diagnosis and management of mood disorders and comorbidities.
- A collaborative care approach for providing treatment and counseling, support, and psychoeducation to at-risk youth and their families is needed.

peers.[4,11,12] The YRBS data[4] have shown consistently that sexual minority youth are more likely to experience violence, engage in high-risk substance use, and experience greater levels of emotional distress and suicide ideation. In addition, victimization and verbal, physical, and sexual abuse are also more frequently reported in this population. Also, victims of physical and sexual abuse have an increased risk of engaging in self-harm, suicidal ideation, and suicidal behaviors.[13] Among transgender youth (aged < 25 years), depression and a history of substance abuse, sexual abuse, gender-based discrimination, and gender-based victimization were independently associated with attempted suicide.[14] Another study[15,16] also found that attempted suicide among transgender people was independently associated with histories of gender-based discrimination, and forced sex body dissatisfaction among transgender youth is also an independent risk factor for suicide attempts and self-injurious behavior.

Meyer's minority stress theory suggests that sexual minorities experience stress due to stigma, internalized homophobia, and hostility. Often, this lifetime of harassment, maltreatment, discrimination, and victimization negatively impacts the mental and physical health outcome.[17] Therefore, more research on identifying psychosocial stressors and their association with suicide among transgender youth is needed to provide a coordinated approach to suicide prevention. Hence, ours is a national inpatient study that aims to demarcate the sociodemographic differences in pediatric and TAY patients hospitalized for suicidal behaviors and struggling with gender dysphoria, measure the demographic factors and comorbidities that are predictive of gender dysphoria in patients with suicidal behaviors, and delineate the impact of comorbid gender dysphoria on hospitalization outcomes, including length of stay (LOS) and cost, and disposition status during primary management of mood disorders.

METHODS

Study Sample

This retrospective cross-sectional study used the Nationwide Inpatient Sample (NIS, 2018–2019), which is the largest collection of inpatient data obtained from non-federal community hospitals across 48 states and the District of Columbia in the US.[18] Our sample included 319,430 patients (aged 6–24 years) with a primary discharge diagnosis (per *ICD-10* criteria) of mood disorders (depressive disorders, bipolar disorders, and other mood disorders) with suicidal behaviors. The study sample was further subgrouped by codiagnosis of gender dysphoria (n = 4,840).

Variables

The demographic variables included in this study were age at admission (6–11 years, 12–18 years, or 19–24 years), sex (male or female), race (White, Black, Hispanic, or Native American/Asian), median household income (below/above 50th percentile), and location (metropolitan or micropolitan counties classified by the National Center for Health Statistics).[19]

Psychiatric comorbidities in this study are the codiagnoses in the patient records, and we included anxiety disorders, obsessive-compulsive disorder (OCD), posttraumatic stress disorder (PTSD), disruptive behavior disorders (DBD), eating disorders, somatic disorders, neurodevelopmental disorders, and substance use disorders (SUD).

The hospital outcomes of interest included LOS, total charges, and disposition. In the NIS, disposition of the patient at discharge was classified as routine, transfer to short-term hospitals, transfers to other facilities like skilled nursing facilities (SNFs) and/or intermediate care facilities (ICFs), transfer to home health care, and discharge against medical advice (AMA).[19]

Statistical Analysis

We compared the distributions of demographic characteristics and psychiatric comorbidities and disposition in inpatients without versus with gender dysphoria using descriptive statistics and the Pearson χ^2 test. We used an independent-samples *t* test for continuous data (LOS and total charges) to evaluate the mean and mean differences. Next, we used a logistic regression model to evaluate the demographic and comorbid factors for gender dysphoria in hospitalized patients with suicidal behaviors. All analyses were conducted using Statistical Package for the Social Sciences (SPSS) version 27.0 (IBM Corp; Armonk, NY), and statistical significance was set at a 2-sided *P* value ≤ .05.

Ethical Approval

The NIS comprises publicly available deidentified data with the protection of patients, physicians, and hospital information; henceforth, we were not required to obtain institutional review board permission for our study according to the Agency for Healthcare Research and Quality (AHRQ) of the US Department of Health and Human Services.[18]

RESULTS

Our study sample consisted of children, adolescents, and TAY hospitalized for suicidal behaviors and primarily managed for mood disorders (depressive disorders, 75.3%; bipolar disorders, 15.9%; and other mood disorders, 8.8%). The sample mostly consisted of adolescents (aged 12–18 years, 54%), females (62.1%), and White individuals (65.8%). These inpatients were from low-income families below the

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Table 1. Differences in Demographic Characteristics in Inpatients With Suicidal Behaviors

Variable	Gender Dysphoria, %		Total, %	*P* Value
	No	Yes		
Age at admission, y				<.001
6–11	4.7	3.2	4.7	
12–18	53.8	68.2	54.0	
19–24	41.5	28.6	41.3	
Sex				<.001
Male	38.1	26.4	37.9	
Female	61.9	73.6	62.1	
Race/ethnicity				<.001
White	65.6	77.4	65.8	
Black	14.8	6.4	14.7	
Hispanic	12.1	9.1	12.1	
Native American/Asian	7.5	7.1	7.5	
Median household income				<.001
Below 50th percentile	54.1	48.3	54.0	
Above 50th percentile	45.9	51.7	46.0	
Location				<.001
Metropolitan counties	84.5	88.8	84.6	
Micropolitan counties	9.8	7.0	9.8	
Other counties	5.7	4.1	5.7	
Primary psychiatric diagnoses				<.001
Depressive disorders	75.2	82.0	75.3	
Bipolar disorders	16.0	12.0	15.9	
Other mood disorders	8.8	6.0	8.8	
Comorbidities				
Anxiety disorders	49.1	63.6	49.3	<.001
OCD	2.9	6.2	2.9	<.001
PTSD	22.5	28.2	22.5	<.001
DBD	9.0	5.7	9.0	<.001
Eating disorders	3.1	8.3	3.2	<.001
Somatic disorders	0.2	0.4	0.2	<.001
Neurodevelopmental disorders	24.2	27.4	24.2	<.001
SUD	35.6	27.2	35.5	<.001

Abbreviations: DBD = disruptive behavior disorders, OCD = obsessive-compulsive disorder, OR = odds ratio, PTSD = posttraumatic stress disorder, SUD = substance use disorders.

Table 2. Predictive Factors for Gender Identity Disorders in Hospitalized Patients With Suicidal Behaviors

Variable	Odds Ratio	95% CI	*P* Value
Age at admission, y			
6–11		Reference	
12–18	1.63	1.37–1.94	<.001
19–24	0.94	0.79–1.13	.512
Sex			
Male		Reference	
Female	1.41	1.31–1.51	<.001
Race/ethnicity			
White		Reference	
Black	0.39	0.35–0.44	<.001
Hispanic	0.63	0.57–0.70	<.001
Native American/Asian	0.80	0.71–0.89	<.001
Median household income			
Below 50th percentile	1.03	0.97–1.09	.336
Above 50th percentile		Reference	
Location			
Metropolitan counties	1.52	1.30–1.76	<.001
Micropolitan counties	1.04	0.87–1.25	.662
Other counties		Reference	
Comorbidities accompanying mood disorders			
None		Reference	
Anxiety disorders	1.59	1.49–1.69	<.001
OCD	1.71	1.51–1.94	<.001
PTSD	1.32	1.24–1.41	<.001
DBD	0.57	0.50–0.65	<.001
Eating disorders	1.95	1.75–2.18	<.001
Somatic disorders	2.30	1.46–3.62	<.001
Neurodevelopmental disorders	1.17	1.09–1.26	<.001
SUD	0.82	0.76–0.88	<.001

Abbreviations: DBD = disruptive behavior disorders, OCD = obsessive-compulsive disorder, PTSD = posttraumatic stress disorder, SUD = substance use disorders.

50th percentile median household income (54%) and from metropolitan counties (84.6%). The prevalence of codiagnosis of gender dysphoria in these inpatients was 1.52%.

Gender dysphoria was seen in a higher proportion of adolescents (68.2% vs 53.8%), females (73.6% vs 61.9%), and White individuals (77.4% vs 65.6%), and the difference was significant when compared with the non–gender dysphoria cohort. Gender dysphoria was prevalent in those from families with a median household income above the 50th percentile (51.7%) and from metropolitan counties (88.8%).

A significantly higher proportion of patients with gender dysphoria had a primary diagnosis of depressive disorders (82% vs 75.2% in those without gender dysphoria). The most prevalent psychiatric comorbidities in inpatients with gender dysphoria included anxiety disorders (63.6%), PTSD (28.2%), and neurodevelopmental disorders (27.4%), and there existed a statistically significant difference when compared with the non–gender dysphoria cohort. The prevalences of eating disorders (8.3%), OCD (6.2%), and somatic disorders (0.4%) were low but were significantly higher than seen in those without gender dysphoria, as shown in Table 1.

Adolescents (OR = 1.63, $P < .001$), females (OR = 1.41, $P < .001$), and those from metropolitan counties (OR = 1.52, $P < .001$) had a higher likelihood of gender dysphoria compared to their counterparts. Black, Hispanic, and Native American/Asian individuals had a lower likelihood of gender dysphoria compared to White individuals, and median household income status had a nonsignificant association with gender dysphoria. Among the psychiatric comorbidities, somatic disorders (OR = 2.30, $P < .001$), eating disorders (OR = 1.95, $P < .001$), OCD (OR = 1.71, $P < .001$), anxiety disorders (OR = 1.59, $P < .001$), PTSD (OR = 1.32, $P < .001$), and neurodevelopmental disorders (OR = 1.17, $P < .001$) increased the likelihood of codiagnoses of gender dysphoria in inpatients hospitalized for suicidal behaviors. SUD and DBD had a negative association that was statistically significant for a codiagnosis of gender dysphoria, as shown in the logistic regression model in Table 2.

The LOS and total charges were significantly higher in inpatients with gender dysphoria, with a mean difference of 1 day and $4,537, respectively. There existed a statistically nonsignificant difference between gender dysphoria and non–gender dysphoria cohorts based on disposition status, as shown in Table 3.

DISCUSSION

Our national inpatient study found that 1.5% of the pediatric and TAY population hospitalized for suicidal

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Table 3. Differences in Hospitalization Outcomes

Outcomes	Gender Dysphoria: No	Gender Dysphoria: Yes	*P* Value
Mean length of stay, d	5.8	6.8	<.001
Mean total charges, $	19,248	23,785	<.001
Disposition, %			.675
Routine	94.9	94.6	
Transfer to short-term hospital	0.6	0.5	
Transfer to SNF/ICF	3.4	4.1	
Home health care	0.2	0.4	
Against medical advice	0.9	0.4	

Abbreviations: ICF = intermediate care facilities, SNF = skilled nursing facility.

behaviors had gender dysphoria. We found that adolescents (increased by 63%) and females (increased by 41%) and those from metropolitan counties (increased by 52%) had a higher likelihood of codiagnosis of gender dysphoria. Among psychiatric comorbidities, somatic disorders, eating disorders, OCD, anxiety disorders, and neurodevelopmental disorders had a significantly higher impact on these at-risk patients for codiagnoses of gender dysphoria.

According to the Centers for Disease Control and Prevention (CDC),[20] 14% of all suicides have been recorded in youth between the ages of 10 and 24 years. In addition, among adolescents, 18.8% seriously considered attempting suicide and 15.7% made a suicide plan in 2018–2019.[20] These results are consistent with our findings, as more than half of the inpatients with suicidal behaviors were adolescents and two-fifths were TAY. Females have represented higher proportions (67.9%) of suicide-related hospitalizations, and the rate of ED visits in 2019 was 244.3 per 100,000, ie, double compared to that seen in 2001.[1] The prevalence rate aligns with that seen in our study of 62% in total inpatients with mood disorders and 73.6% in those with codiagnosis of gender dysphoria.

The YRBS from 2017[4] reported that 1.8% of students identified as transgender, and per a systemic review, the estimated prevalence was 0.17%–1.3%, which is close to the prevalence seen in our inpatient population with national estimates.[1,4] There is a lack of systemic data on the number of deaths by suicide among transgender individuals. The USTS (2015) found that 48.3% had suicide attempts in the past year, while 81.7% reported seriously thinking about suicide in their lifetimes.[21] Another study[10] also found that sexual minority adolescents had a higher lifetime prevalence of suicide ideation (26.1% vs 13.0%), plan (16.6% vs 5.4%), and attempt (12.0% vs 5.4%) than heterosexual adolescents. According to Perez-Brumer at el,[22] there exists a significant gender identity–related difference in suicidal ideation, as nearly 35% of transgender youth in California reported suicidal ideation, which was about double the rate of non-transgender youth. This finding is notable because it is twice as high as the national estimate of the past 12-month suicidal ideation among youth in grades 9–12 (17%). Mediation analyses revealed that established psychosocial factors such as depression and school-based victimization explained a portion of the relationship between gender identity and suicidal ideation.[22]

About 18% of the transgender participants in a study by Maguen and Shipherd[23] reported a past suicide attempt, with trans men reporting the highest rate of suicide attempts (41%), followed by trans women (20%). Suicide attempts are common in lesbian, gay, and bisexual adults, ranging from 10% to 20%. Non-suicidal self-injury (such as cutting, hitting, or burning oneself) affects 19%–38% of transgender individuals, with trans men accounting for 58% and trans women for 26%.[24] Factors associated with having a past suicide attempt included female sex assigned at birth, psychiatric hospitalizations, and having experienced transgender-related violence.[23] In addition, a higher frequency of suicide attempts was found in transgender youth with a desire for weight change, and more female-to-male youth reported a history of suicide attempts and self-harm behaviors than male-to-female youth.[25] Internalized transphobia is an unconscious negative self-concept of gender identity, including self-hatred or shame. It increases the likelihood of attempting or completing suicide. Those who are members of a racial or ethnic minority or have less education are at a higher risk.[24] Gender dysphoria was seen in a higher proportion of females (41% higher likelihood than in males) in our study of inpatients with suicidal behaviors. Transgender individuals have an elevated prevalence of suicidal behaviors among those with lower socioeconomic status (less education, unemployed, lower household income, experiencing homelessness) and those experiencing severe psychological distress and substance abuse.[21] The prevalence of transgender and gender-nonconforming youth did not differ significantly between metropolitan and non-metropolitan areas,[26] whereas we found that the majority of our inpatients with a codiagnosis of gender dysphoria were from families with a median household income above the 50th percentile and from metropolitan counties.

Regarding suicidal ideation and self-inflicted injuries, trans women had a higher prevalence rate than trans men. These at-risk patients suffer feelings of distress when a person's assigned gender does not match their identity. In addition, children who engage in gender-inappropriate behavior may experience stress from prejudice and discrimination due to being in a minority group, creating or exacerbating emotional and behavioral problems.[27]

Depressive disorders are common in the pediatric population, with estimates as high as 18.2% for girls and 7.7% for boys by age 17, and are considered a significant risk factor for suicidality.[28–30] About three-fourths of the total inpatients hospitalized for suicidal behaviors and four-fifths of the gender dysphoria cohort had a primary diagnosis of depressive disorders. There exists a higher rate of depression with suicidality and self-harm behaviors in youth who identify as transgender compared to their peers.[1,5,31]

A study using the YRBS data has shown that sexual minority youth are more likely to experience violence, engage in high-risk substance use, and experience greater levels of emotional distress and suicide ideation.[4] In addition, victimization and verbal, physical, and sexual abuse are also more frequently reported in this population,

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leading to an increased risk of engaging in self-harm, suicidal ideation, and suicidal behaviors.[13] Transgender youth (under age 25 years) struggling with substance abuse and trauma including sexual abuse, gender-based discrimination, and gender-based victimization were independently associated with attempted suicide.[14] In our study, the prevalence of PTSD was 22.5% in total inpatients and 28.2% in the gender dysphoria cohort, so those with PTSD have a 32% higher likelihood of a codiagnosis of gender dysphoria.

Anxiety disorders are the most common psychiatric illness, as 1 in 8 adolescents meets its clinical criteria, and this could be a possible reason that anxiety disorder was the most prevalent comorbidity in our study.[32] Anxiety disorders convey risk for suicidal ideation above and beyond any co-occurring depressiveness, and anxiety and depression together conveyed an additional interactive risk.[33] Depressed patients with comorbid OCD had increased current and lifetime suicide ideation and history of suicide attempts compared to those with depression alone.[34] We found that pediatric and TAY inpatients hospitalized for suicidal behaviors with comorbid OCD and anxiety disorders had a 71% and 59% higher likelihood of a codiagnosis for gender dysphoria and each of those disorders, respectively. Another important risk factor is body dissatisfaction, which is independently associated with suicide attempts and self-injurious behavior.[16] In our study, the prevalence of eating disorders was 3% in total inpatients with suicidal behaviors and 8.3% in the gender dysphoria cohort, and we found that those with eating disorders have a 95% higher likelihood of having a codiagnosis of gender dysphoria.

However, our findings should be considered in the context of some limitations. First, our study was a cross-sectional study; such studies cannot be used to determine causal relationship but can only provide a useful starting point for further research. Secondly, the NIS data are considered more of an administrative database, as there is a lack of patient-level clinical information, and inpatients' diagnoses are based on *ICD* codes, which may underreport other existing comorbidities and may be affected by selection and reporting biases. Lastly, our study results are based on an inpatient population that has severe clinical presentation demanding higher level of psychiatric care and lacks external validity and should not be compared to individuals in other clinical/outpatient settings and community-based populations. This study overviews the data on adolescent and youth suicidal behavior specifically focused on epidemiologic and psychiatric comorbidities. Nevertheless, these results aid in understanding the gender identity–related disparities in suicidal behavior and in navigating more helpful resources. In addition, these findings can be used to develop a more comprehensive understanding and assessment of transgender adolescent suicide risk factors.

CONCLUSION

Inpatients with suicidal behaviors as well as those with gender dysphoria mostly consisted of adolescents, females, and White individuals. We found that the adolescents (increased by 63%) and females (increased by 41%) and those from metropolitan counties (increased by 52%) had a higher likelihood of codiagnosis of gender dysphoria. There exists a high prevalence of psychiatric comorbidities in those with gender dysphoria and hospitalized for suicidal behavior. Our findings call for prompt evaluations of comorbidities of suicidal behaviors among adolescents and youth with gender dysphoria to provide a coordinated approach to suicide prevention, thereby reducing the future risk of poor health outcomes and mortality.

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