Depression and Suicidal Behavior in Young Adult Men and Women With ADHD:
Evidence From Claims Data

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ABSTRACT

Objective: This study used commercial claims data to examine the effects of ADHD and sex on the prevalence of depression, suicidal ideation, and suicide attempts in a sample of young adult men and women (aged 18–25 years) with and without attention-deficit/hyperactivity disorder (ADHD). Patterns of treatment use for these conditions was also explored.

Methods: Young adults with ADHD (162,263 women and 225,705 men) having at least 2 claims with the *International Classification of Diseases, Ninth Revision* (*ICD-9*), code for ADHD and a sex- and age-matched group of young adults without an *ICD-9* code for ADHD (162,263 women and 225,705 men) were identified. The prevalence of *ICD-9* depression and suicidal behavior along with the use and cost of related treatment were compared between young adults with and without ADHD using 2014 claims data.

Results: Compared to young adults without ADHD, young adults with ADHD were more frequently identified with depression, suicidal ideation, and suicide attempts. Depression and suicidal ideation were identified more frequently among women with ADHD compared to all other groups. Young adults with ADHD were more frequently engaged in outpatient and inpatient mental health care compared to young adults without ADHD ($P < .0001$ in each instance). Furthermore, overall costs of outpatient and inpatient care were greater among young adults with ADHD compared to young adults without ADHD ($P < .0001$ in each instance).

Conclusions: These findings highlight the substantial burden of depression and suicidal behavior among young adults with ADHD, particularly women, and underlie the need for more research focused on mitigating risk for depression and suicidal behavior among both men and women with ADHD.

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While once considered a disorder relevant only to children, it is now clear that attention-deficit/hyperactivity disorder (ADHD) persists into adulthood for the majority of individuals[1] and is associated with increased risk for psychopathology and impairment, including depression and suicidal behavior. The risk for depression and suicidal behavior among individuals with ADHD appears prominently during young adulthood, a developmental period characterized by increased responsibility and transitions from school into work and navigating relationships.[2] Approximately 50% of individuals with ADHD meet diagnosis for depression in adulthood,[3] which is more than twice the prevalence of depression in the general population.[4] In addition, recent studies suggest that at least 13% of young adults with ADHD attempt suicide,[5,6] which is more than 4 times the rate of young adults without ADHD.[7] Depression and suicidal behavior present considerable burden for individuals with ADHD, including high rates of mental health service utilization that are often long-term and costly.[8] Yet, current estimates of depression and suicide among individuals with ADHD may actually underestimate the gravity of these difficulties, as the majority of studies have not included women with ADHD,[3,9] who may be at even greater risk for depression and suicide attempts.[10–12]

ADHD is diagnosed 2 to 3 times more frequently in boys than girls in childhood,[13] and, as a result, relatively little research has been focused on females with ADHD.[14] However, identification of ADHD has increased in girls,[15] and in adulthood, nearly equivalent numbers of men and women present with ADHD.[16] In adulthood, many women with ADHD present for clinical attention with co-occurring mood problems.[17] Prospective longitudinal studies of girls with ADHD show high rates of depression and suicide in young adulthood that appear greater than those identified among boys with ADHD.[18] For example, in the Berkeley Girls ADHD Longitudinal Study,[11] one of the largest and most comprehensive longitudinal studies of girls with ADHD, as many as 67.9% of young adult women with persistent ADHD compared to 34.1% of women without ADHD were diagnosed with depression. Additionally, 27.5% of women with persistent ADHD versus 6.1% of comparison women without ADHD reported ever attempting suicide.[11] Emerging comparisons of young adult men and women with ADHD also point to greater risk for depression and suicide attempts in women compared to men with the disorder in young adulthood.[6,10] For instance, in a sample of young adults with (n = 125) and without (n = 123) ADHD identified in preschool, depression and suicide attempts were most frequent among young adult women with ADHD

Clinical Points

- Very little work has examined the risk for depression and suicidal behavior in young adult men and women with attention-deficit/hyperactivity disorder (ADHD).
- Relative to young adults without ADHD, young adults with ADHD, particularly women, were at significantly higher risk for these negative outcomes and used more frequent and costly care related to depression and suicidal behavior.
- Findings point to the importance of considering sex and ADHD status in assessing risk and need for treatment of depression and suicidal behavior in young adulthood.

relative to other groups.[10] Depression was nearly twice as likely among young adult women with ADHD compared to young adult men with ADHD, although only 18 women with ADHD were included in the study. A population-based study of suicide attempts in individuals aged 10 years and older in Denmark also suggests elevated risk for suicidal behavior among females with ADHD and males with ADHD (incidence rate ratio of 9.1 versus 3.4, respectively) relative to men without ADHD. Moreover, ADHD and sex effects emerged most prominently in the 20- to 29-year-old age range,[6] relative to adolescence (10 to 19 years old) and later adulthood (30 years old and older). Continued study of depression and suicidal behavior in large, representative samples of young adult men and women with ADHD in the United States is critical in order to understand the burden of depression and suicidal behavior among young adults with ADHD. Detection of unique risk for depression and suicidal behavior among young adult women with ADHD may suggest the need for sex-specific intervention.

Analysis of insurance claims data may provide insight into the clinical relevance of depression and suicidal behavior in young adult women and men with ADHD. Very large samples of young adult men and women with ADHD can be sampled from claims data to examine how frequently depression and suicidal behavior are identified in the clinical setting and survey the costs of related mental health services. Although findings from clinical and epidemiological studies[8,10,18] suggest that depression and suicidal behavior are prominent concerns for many young adults with ADHD, very little is known about how often young adults with ADHD engage in clinical services to address these problems, the type of treatment they pursue, and the cost of these services. There are relevant psychosocial and medication treatment options for young adults with ADHD, depression, and suicidal behavior that are offered in the outpatient setting. Additionally, the severity of these difficulties may also necessitate inpatient care.[8] Examining the prevalence of depression and suicidal behavior within claims data and characterizing type and cost of treatment use for depression and suicidal behavior among young adults with ADHD may inform efforts to engage young adults in treatment and mitigate long-term risk for depression and suicidal behavior beyond young adulthood.

The goal of this study was to examine the prevalence of depression and suicidal behavior among young adult men and women (aged 18–25 years) with and without ADHD using a large claims database. In addition, patterns of health care utilization for depression and suicidal behavior as well as related health care costs were examined. It was hypothesized that young adults with ADHD would demonstrate higher rates of depression and suicidal behavior compared to those without ADHD and that young adult women with ADHD would demonstrate the highest risk relative to other groups (ie, men with ADHD as well as men and women without ADHD). Given the lack of extant literature to guide hypotheses related to health care utilization among young adults with ADHD, specific hypotheses were not made.

METHODS

Young adults aged 18–25 years (inclusive) with and without ADHD were identified within the 2014 MarketScan Commercial Claims and Encounters database (IBM Truven Health Analytics; https://www.ibm.com/products/marketscan-research-databases). This claims database consists of reimbursed health care claims from a selection of large employers and commercial health plans. Included individuals are covered by private insurance plans across the United States, with claims information from more than 130 payers describing the health care use and expenditures for more than 50 million employees and family members per year. Claims for individuals are identified by a unique enrollee identifier and contain information on inpatient, outpatient, and prescription drug service use as well as age, sex, geographic location, and type of health insurance plan. The database uses codes from the *International Classification of Disease, Ninth Revision* (*ICD-9*), to identify diagnoses and clinical features. Current Procedural Terminology, Fourth Edition (CPT-4), codes identify type of treatment use. Truven Health has a quality control process to verify that the data meet criteria for quality and completeness. The database includes data only from fully paid and adjudicated claims, and the diagnosis and procedure codes are compared with codes in effect when raw data were collected and are edited as necessary. This database has been used in other studies examining correlates of adult ADHD.[19,20] This study protocol was submitted to the Pennsylvania State University institutional review board, and the study was not considered to be human subject research. Informed consent was waived because data of the study participants were deidentified.

Young adults with ADHD were required to have at least 2 documented claims listing a diagnosis of ADHD (ie, 314.00; 314.0x; 314.01) using all available data from 2005 through 2014. Any history of claims for autism (299, 299.x), schizophrenia (295.xx and 298.1x–298.9x; 295.x), organic brain disorder (310.9), neurologic problems (349.9), and mental retardation (317–319) were exclusionary. A total of 387,968 young adults with ADHD (162,263 women and 225,705 men) were identified, which represents 6% of individuals aged 18 to 25 years enrolled in the

Table 1. Demographic Characteristics[a]

Variable	Women		Men	
	ADHD (n = 162,263)	Non-ADHD (n = 162,263)	ADHD (n = 225,705)	Non-ADHD (n = 225,705)
Age, y				
18	20,464 (12.61)	20,464 (12.61)	35,795 (15.86)	35,795 (15.86)
19	21,171 (13.05)	21,171 (13.05)	34,158 (15.13)	34,158 (15.13)
20	21,609 (13.32)	21,609 (13.32)	31,890 (14.13)	31,890 (14.13)
21	21,394 (13.18)	21,394 (13.18)	29,544 (13.09)	29,544 (13.09)
22	21,205 (13.07)	21,205 (13.07)	27,543 (12.20)	27,543 (12.20)
23	20,798 (12.82)	20,798 (12.82)	25,846 (11.45)	25,846 (11.45)
24	19,236 (11.85)	19,236 (11.85)	22,337 (9.90)	22,337 (9.90)
25	16,386 (10.10)	16,386 (10.10)	18,592 (8.24)	18,592 (8.24)
Location (ie, US region)				
Northeast	29,446 (18.15)	23,591 (14.54)	43,272 (19.17)	33,113 (14.67)
North Central	38,472 (23.71)	50,154 (30.91)	57,427 (25.44)	66,307 (29.38)
South	70,468 (43.43)	72,998 (11.99)	90,390 (40.05)	93,313 (41.34)
West	19,728 (12.16)	14,405 (8.88)	29,729 (13.17)	31,102 (13.78)
Unknown	4,149 (2.56)	1,115 (0.69)	4,887 (2.17)	1,870 (0.83)
Type of insurance plan				
HMO	17,934 (11.05)	13,887 (8.56)	27,368 (12.13)	24,632 (10.91)
PPO	98,648 (60.80)	73,899 (45.54)	134,188 (59.45)	113,505 (50.29)
Other	45,681 (28.15)	74,477 (45.90)	64,149 (28.42)	87,568 (38.80)
Comorbid psychopathology[b]				
Anxiety disorder	33,622 (20.72)	14,305 (8.82)	28,131 (12.46)	14,068 (6.23)
Conduct disorder	603 (0.37)	194 (0.12)	1,313 (0.58)	498 (0.22)
Tobacco use disorder	6,798 (4.19)	3,430 (2.11)	10,625 (4.71)	7,702 (3.41)
Alcohol use disorder	2,900 (1.79)	1,197 (0.74)	5,898 (2.61)	3,749 (1.66)
Other substance use disorder	4,357 (2.69)	1,677 (1.03)	10,325 (4.57)	5,779 (2.56)

[a]All values are shown as n (%).
[b]*ICD-9* codes: anxiety disorder: 300.0x; 300.2x; 300.3; 308.3; 309.81; conduct disorder: 312.*; tobacco use disorder: 305.1; alcohol use disorder: 291.xx, 303.xx; 305.0x, 357.5x; other substance use disorder: 292.1x–292.8x; 304.xx; 305.2x–305.9x; 357.6x; 648.3x.
Abbreviations: ADHD = attention-deficit/hyperactivity disorder, HMO = health maintenance organization, PPO = preferred provider organization.

MarketScan database. In the sample of young adults with ADHD, 49.42% of women and 39.49% of men received medication for ADHD (ie, amphetamine salt combination, dexmethylphenidate hydrochloride, dextroamphetamine sulfate, lisdexamfetamine dimesylate, methamphetamine hydrochloride, methylphenidate, methylphenidate hydrochloride, and atomoxetine hydrochloride). An age- and sex-matched group of young adults without ADHD (162,263 women and 225,705 men) was also constructed. Young adults in the non-ADHD group were required to not have a diagnosis of ADHD documented using all available data from 2005 through 2014. All other exclusionary criteria were similar to those of the ADHD group. Demographic characteristics and diagnostic comorbidities of the groups divided by sex are presented in Table 1.

Measures

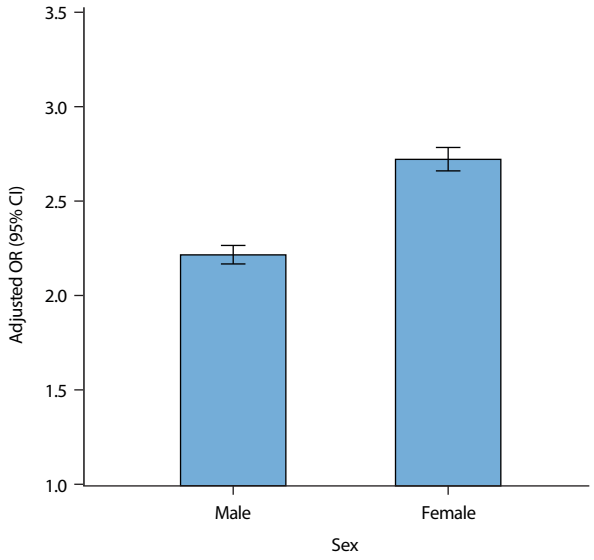
Prevalence of depression and suicidal behavior. Using claims data from 2014 only, depression was identified by *ICD-9* codes 296.0–296.82, 298.0, 300.4, 300.9, and 311. Suicidal ideation was identified using *ICD-9* codes E950.0–E958.0 and E969.0, and suicide attempts were identified using V62.84.

Psychiatric treatment use and costs. Only treatment delivered in 2014 was examined for this study. Receipt of any outpatient treatment related to depression or suicidal behavior was examined based on whether an individual had pursued medication management or psychotherapy with an *ICD-9* code indicated for depression, suicidal ideation, or suicide attempt in 2014. CPT-4 codes for medication management were 90805, 90807, 90809, 90811, 90813, 90815, 90817, 90819, 90822, 90824, 90827, 90829, and 90862, and use of 1 or more of the following depression medications was identified: escitalopram, fluoxetine, paroxetine, sertraline, fluvoxamine maleate, amitriptyline, amoxapine, clomipramine, desipramine, doxepin, imipramine hydrochloride, imipramine pamoate, nortriptyline, protriptyline, trimipramine, nefazodone, trazadone, mirtazapine, maprotiline, bupropion, and venlafaxine. Psychotherapy was identified using CPT-4 codes 90846, 90847, 90849, 90853, and 90804 through 90829. Inpatient services for depression or suicidal behavior were identified by CPT-4 codes 99251, 99252, 99253, 99254, 99255, 99232, 99233, 99231, 99238, 99239, 90816, 90817, 90818, and 90819 and an *ICD-9* code for depression and/or suicidal behavior. Total cost per person was estimated for outpatient therapy, medication management, and inpatient services.

Planned Analyses

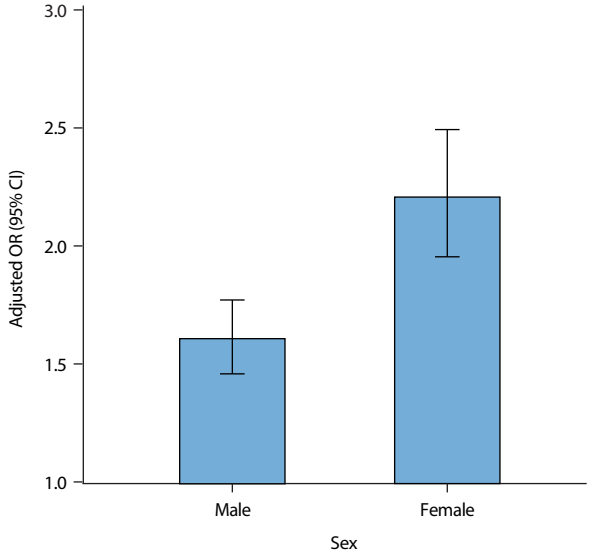
Analyses were conducted in SAS version 9.4 software (SAS Institute, Cary, North Carolina). To examine the effects of sex and ADHD on the prevalence of depression and suicidal behavior, logistic regression was used. Regression models

Figure 1. Depression Claims by Sex and Attention-Deficit/Hyperactivity Disorder (ADHD) Status[a]



[a]Each bar represents the odds ratio (OR) of depression in young adults with ADHD relative to young adults without ADHD.

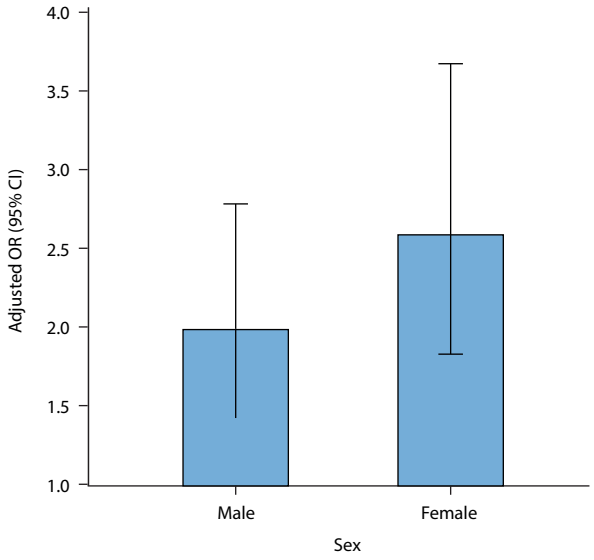
Figure 2. Suicidal Ideation Claims by Sex and Attention-Deficit/Hyperactivity Disorder (ADHD) Status[a]



[a]Each bar represents the odds ratio (OR) of suicidal ideation in young adults with ADHD relative to young adults without ADHD.

included ADHD diagnosis (1 = present, 0 = absent) and sex (1 = female, 0 = male) as well as an interaction variable, ADHD by sex. Chi-square tests for categorical variables and *t* tests for continuous variables were used to compare service utilization and cost between young adults with and without ADHD. Analyses were conducted controlling for sociodemographic variables, including age, type of insurance plan (ie, health maintenance organization vs preferred provider organization [PPO] and PPO vs other insurance), and region of the United States, which have routinely been included in claims data studies and have been associated with depression and suicidal behavior.[21,22] Results were similar with and without inclusion of these covariates.

Figure 3. Suicide Attempts by Sex and Attention-Deficit/Hyperactivity Disorder (ADHD) Status[a]



[a]Each bar represents the odds ratio (OR) of a suicide attempt in young adults with ADHD relative to young adults without ADHD.

RESULTS

Prevalence of Depression by ADHD and Sex

A significant ADHD × sex interaction emerged for depression ($P < .0001$) and is presented in Figure 1. Among women, ADHD was associated with a higher likelihood of depression (adjusted odds ratio [AOR] = 2.74; 95% CI, 2.64–2.80), and the magnitude of this effect was larger than that identified among men with and without ADHD. Among men, ADHD was associated with a higher likelihood of depression (AOR = 2.22; 95% CI, 2.17–2.27). ADHD (AOR = 2.46; 95% CI, 2.42–2.50) and female sex (AOR = 1.57; 95% CI, 1.54–1.59) were significantly associated with a higher likelihood of depression.

Prevalence of Suicidal Ideation and Attempts

A significant ADHD × sex interaction ($P < .0001$) emerged regarding the identification of suicidal ideation (Figure 2). Among women, ADHD was associated with suicidal ideation (AOR = 2.21; 95% CI, 1.95–2.49), and the magnitude of this effect was greater than the effect demonstrated in men. Among men, ADHD was also associated with suicidal ideation (AOR = 1.61; 95% CI, 1.46–1.77). ADHD was associated with a higher likelihood of suicidal ideation (AOR = 1.83; 95% CI, 1.69–1.97), while sex was not (AOR = 1.04; 95% CI, 0.96–1.12).

As presented in Figure 3, an ADHD × sex interaction did not emerge for suicide attempts ($P = .2816$). ADHD

Table 2. Treatment Utilization in 2014 for Depression and Suicidal Behavior Among Young Adults With and Without ADHD[a]

	Women		Men		
Variable	ADHD	Non-ADHD	ADHD	Non-ADHD	*P* Value
Any outpatient mental health treatment, %	1.99	0.73	1.65	0.81	<.0001
Mean cost of all outpatient mental health care, $	144.80	52.55	105.90	51.60	<.0001
Medication management, %	0.03	0.00	0.02	0.02	<.0001
Mean cost of medication management, $	0.091	0.004	0.05	0.06	.017
Prescribed medication for depression, %	22.24	13.46	13.26	8.30	.0071
Psychotherapy, %	0.79	0.23	0.60	0.25	<.0001
Mean cost of psychotherapy, $	8.80	2.40	6.40	2.12	<.0001
Inpatient hospitalization for depression/suicidal behavior, %	1.37	0.54	1.17	0.61	<.0001
Mean cost of inpatient hospitalization, $	135.90	50.15	99.41	49.41	<.0001

[a]Results presented are from univariate analyses (ie, χ^2 and *t* tests) comparing young adults with and without ADHD; *P* values represent the effect of ADHD.

(AOR = 2.27; 95% CI, 1.78–2.89) and female sex (AOR = 1.52; 95% CI, 1.22–1.90) were significantly associated with a higher likelihood of suicide attempts.

Psychiatric Service Use and Costs Associated With Depression and Suicidal Behavior

Treatment use is reported in Table 2. Young adults with ADHD were more likely than young adults without ADHD to use outpatient treatment, including medication management and psychotherapy. Among young adults in our sample who sought any outpatient treatment, the majority had ADHD (72.23% of women and 67.13% of men had ADHD compared to 26.77% of women and 32.87% of men who did not have ADHD). Similarly, among those young adults seeking medication management, the majority (94.92% of women and 53.57% of men) had ADHD compared to 5.08% of women and 46.43% of men who did not have ADHD; specifically among those prescribed medication for depression, the majority had ADHD (62.31% of women and 61.50% of men had ADHD compared to 37.69% of women and 38.50% of men who did not have ADHD). Among young adults who received psychosocial treatment, most (77.16% of women and 70.46% of men) had ADHD compared to young adults without ADHD (22.84% of women and 29.54% of men). Finally, young adults with ADHD were more likely than young adults without ADHD to be hospitalized for depression and/or suicidal behavior. Among young adults who were hospitalized, the majority (71.73% of women and 65.80% of men) had ADHD compared to those who did not have ADHD (28.27% of women and 34.20% of men).

The cost of outpatient treatment, including medication management and psychotherapy, and inpatient treatment was greater among young adults with versus without ADHD (Table 2). Among those young adults who pursued any outpatient treatment, costs were similar for those with ($7,380.37 for women and $6,443.90 for men) and without ADHD ($7,292.99 for women and $6,792.35 for men). Among young adults who had pursued outpatient medication management, costs were similar among those with ($263.21 for women and $232.56 for men) and without ADHD ($209.00 for women and $335.54 for men), although among young adults pursuing outpatient psychosocial treatment, those with ADHD demonstrated significantly higher costs ($1,108.91 for women and $1,074.53 for men) compared to those without ADHD ($1,023.38 for women and $849.36 for men) ($P < .0001$). Among young adults hospitalized for psychiatric reasons, costs were similar for those with ($9,972.27 for women and $8,485.01 for men) and without ADHD ($9,286.33 for women and $8,558.30 for men).

DISCUSSION

The prevalence of depression and suicidal behavior among young adult men and women with and without ADHD in a claims database was examined in this study. Additionally, patterns and cost of mental health service utilization for depression and suicidal behavior among young adult men and women with and without ADHD were described. Depression, suicidal ideation, and suicide attempts were more frequently identified among young adults with versus without ADHD, and young adult women with ADHD demonstrated the greatest prevalence of depression and suicidal behavior compared to the other 3 groups. Young adults with ADHD used more outpatient and inpatient services compared to young adults without ADHD, and overall costs of outpatient and inpatient care were greater among young adults with versus without ADHD.

Young adults with ADHD were identified more than twice as frequently with depression compared to young adults without ADHD. Thus, findings from these claims data mirror results from clinical samples, pointing to high levels of depression among young adults with ADHD.[8,10,11,18] Depression is one of the most common mental health concerns in adulthood,[23] and depression in young adulthood is associated with high risk for persistent depression across the lifespan as well as additional difficulties, including substance use, academic and occupational impairment, and relationship dysfunction.[18,24] Yet, the combination of ADHD and depression is associated with markedly more burden.[18,24] In addition to screening for depression among young adults with ADHD, it may also be worthwhile for clinicians to consider the presence of ADHD among young adults presenting with depression.

Given that depression is one of the most salient predictors of suicidal ideation,[25] it was not surprising that a higher

prevalence of suicidal ideation was also reported among young adults with versus without ADHD. Indeed, some work[26] suggests there is a stronger relationship between depression and suicidal thoughts among young adults with versus without ADHD. Similarly, young adults with ADHD were also more likely than young adults without ADHD to merit clinical attention related to a suicide attempt, consistent with findings from emerging clinical samples of young adults with ADHD.[10,11] Despite clear links between ADHD, depression, and suicidal behavior, prospective longitudinal study is needed to determine the extent to which depression mediates the link between ADHD and suicidal behavior or whether the risk for suicidal behavior among young adults with ADHD is independent of depression. Relatedly, predicting who actually attempts suicide is still unclear.[27] It may be that ADHD is most clearly predictive of suicide in the presence of multiple additional adversities, including unemployment, depression, substance abuse, and trauma, all of which have been identified among young adults with ADHD.[11,28]

Yet, beyond the effects of ADHD on depression and suicidal behavior, women with ADHD presented most frequently for clinical care related to depression and suicidal behavior in young adulthood. Indeed, there was an additive effect of ADHD and female sex on depression and suicidal ideation in our sample, fitting with an accumulating body of work that demonstrates a sex-specific risk for depression and suicidal behavior among young adult women with ADHD.[8,10,11] Importantly, our study represents one of the first investigations of this interaction with adequate statistical power. This heightened vulnerability for women with ADHD challenges the historical belief that ADHD was associated with a less severe presentation in women compared to men.[14] It may be that sex-specific trajectories of impairment become more pronounced among adults with ADHD. For example, a high prevalence of anxiety, approximately 20%, was apparent among women with ADHD in our sample, while substance use disorders (with the exception of tobacco use disorder) appeared greater among men with ADHD. Certainly, there is also the possibility that the data in this study are skewed based on help-seeking literature suggesting that women are more likely to present for mental health care compared to men.[29] Nonetheless, the data in this study point to substantial burden for young adult women and men with ADHD.[8,11]

Given the prominent levels of depression and suicidal behavior among young adults with ADHD, it was not surprising that in the overall sample young adults with ADHD were more likely than young adults without ADHD to use any mental health treatment for depression and suicidal behavior and to incur greater costs for these treatments. However, among only those young adults who pursued these services, only outpatient psychosocial therapy was more costly among young adults with versus without ADHD. This finding very likely reflects that depression and/or suicidal behavior co-occurring with ADHD presents greater complexity to the therapeutic setting.[8,30] In contrast, among young adults engaging in outpatient medication management, total outpatient care, and inpatient care, costs per patient were similar among those with and without ADHD, raising the possibility that young adults with ADHD may be receiving an insufficient level of care at the outpatient and inpatient level. From claims data alone, it is difficult to discern to what extent treatment use among young adults with ADHD was specific to depression and suicidal behavior versus ADHD. Currently, there are a lack of clinical guidelines for the assessment and treatment of depression and suicidal behavior among young adults with ADHD, although at least some work suggests that treatments for depression and suicidal behavior may be longer and less efficacious in the context of ADHD.[30,31] These data demand that ADHD be considered in the manifestation of depression and suicidal behavior and that efforts to address treatment of these debilitating conditions continue in young adult men and women (eg, sequencing).

This study has a number of limitations. First, it examined depression and suicidal behavior from a case-control study of 2014 claims data from privately insured young adults. Thus, the findings regarding the prevalence of depression and suicidal behavior and patterns of mental health treatment utilization may not generalize to all young adults with ADHD and may actually underestimate the prevalence of these concerns. Indeed, the level of depression and suicidal behavior identified in the sample was lower than levels identified in clinical samples,[8,10,11] and more recent data[32] suggest the incidence of suicidal behavior has increased over time. Second, *ICD-9* codes were used, and we cannot be sure measures of diagnosis and suicidal behavior were made using best practices. Although we required at least 2 claims for ADHD to identify the ADHD group, it is possible some adults with ADHD, particularly those who may be less likely to access treatment, were not identified by this method. However, the prevalence of young adults meeting ADHD diagnosis in the MarketScan database using this method was generally consistent with the prevalence of adult ADHD in the general population.[16] Third, there is a lack of specificity in claims data, limiting understanding of whether treatment pursued was specific to ADHD or depression and suicidal behavior. Lastly, assessment of ADHD requires evidence that symptoms of ADHD were present and impairing prior to the age of 12 years, which we cannot determine from these cross-sectional claims data.

Even with these considerations, our findings highlight the relevance of depression and suicidal behavior for young adult women and men with ADHD. Given that depression and suicidality in young adulthood forebode long-term problems with depression and suicidality, as well as additional difficulties across the lifespan,[11,18,24,33] future work prioritizing treatment for young adults with ADHD and depression is greatly needed. Additionally, there is also some evidence that treatment for ADHD may mitigate risk for depression and suicide.[30,34] Thus, prospective longitudinal work on long-term treatment and adherence to treatment among young adults with ADHD, depression, and suicidal behavior should also be prioritized.

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Editor's Note: We encourage authors to submit papers for consideration as a part of our Focus on Women's Mental Health section. Please contact Marlene P. Freeman, MD, at mfreeman@psychiatrist.com.