



Visits to Health Centers by Adults With Attention-Deficit/Hyperactivity Disorder: United States, 2023

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Key findings

Data from the National Ambulatory Medical Care Survey Health Center Component

- The health center visit rate for adults with attention-deficit/hyperactivity disorder (ADHD) was 52.6 visits per 10,000 adults in 2023 and decreased with increasing age.
- Among health center visits by adults with ADHD, most included a co-diagnosis of selected mental health disorders, including anxiety and mood disorders.
- An estimated 40.1% of health center visits by adults with ADHD included a co-diagnosis of selected chronic conditions not related to mental health, including overweight or obesity (24.2% of visits).
- An estimated 41.7% of health center visits by adults with ADHD had a documented amphetamine prescription.

Introduction

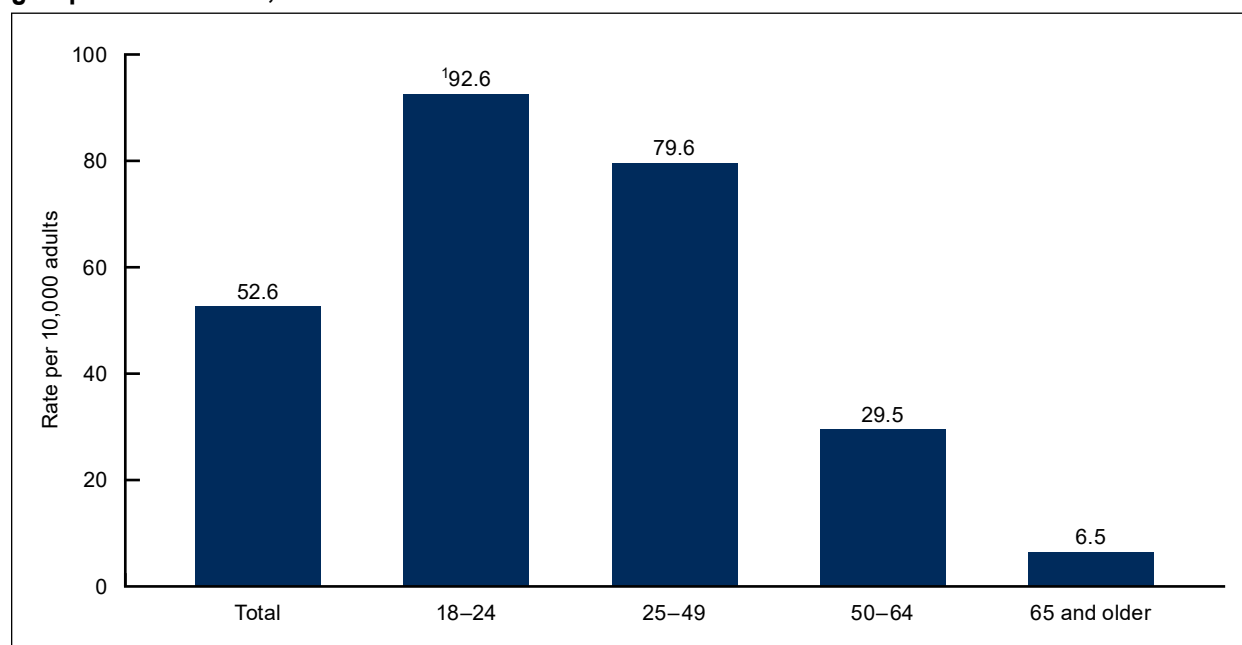
Attention-deficit/hyperactivity disorder (ADHD) is one of the most common childhood disorders and can continue through adolescence into adulthood (1). In 2023, about 15.5 million U.S. adults had an ADHD diagnosis, and more than one-half of those adults were first diagnosed in adulthood (55.9%) (2). Health centers are local, community-based clinics that provide care to those who often encounter issues accessing health care (3). This report describes rates and characteristics of health center visits by adults with diagnosed ADHD, using data from the 2023 National Ambulatory Medical Care Survey Health Center (NAMCS HC) Component (4).



Visit rates by age

- The health center visit rate for adults with ADHD was 52.6 visits per 10,000 adults in 2023 (Figure 1, Table 1).
- A decreasing trend by age was seen for adults with ADHD, with adults ages 18–24 having the highest rate (92.6) and those age 65 and older having the lowest (6.5).

Figure 1. Visit rate by adults with attention-deficit/hyperactivity disorder at health centers, by age group: United States, 2023



¹Significant decreasing trend with increasing age ($p < 0.05$).

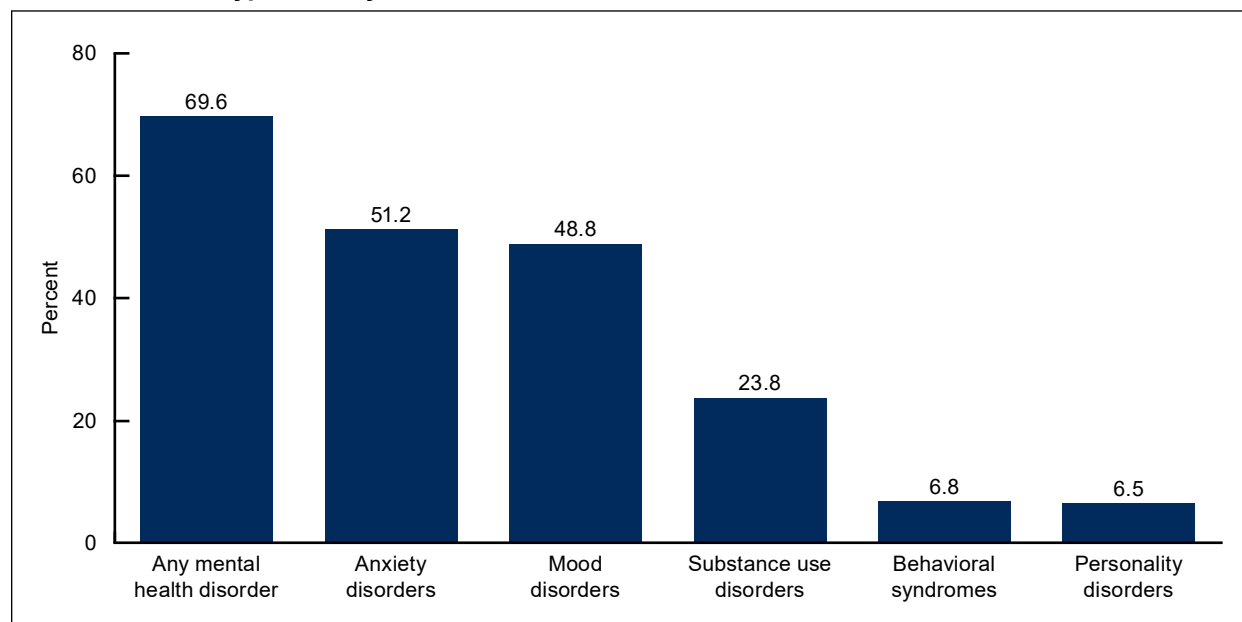
NOTES: In 2023, adults age 18 and older with attention-deficit/hyperactivity disorder (ADHD) made 108,590 visits to health centers. For this figure, health centers at which all diagnoses were missing for all visits ($n = 4$) were excluded and visit weights for the remaining health centers were normalized to account for those excluded, representing about 1.4 million health center visits (1.4% of all visits by adults). Visits with ADHD were defined as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* diagnosis code of F90. Visit rates were based on estimates of the U.S. civilian noninstitutionalized population developed by the U.S. Census Bureau. Rates reflect the population as of July 1, 2023.

SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2023.

Co-diagnosis of mental health disorders

- Among health center visits by adults with ADHD, 51.2% had a co-diagnosis of an anxiety disorder, 48.8% a mood disorder, 23.8% a substance use disorder, 6.8% a behavioral syndrome, and 6.5% a personality disorder (Figure 2, Table 2).
- An estimated 69.6% of health center visits by adults with ADHD included documentation in the electronic health record (EHR) of a co-diagnosis of any of the selected mental health disorders.

Figure 2. Co-diagnosis of mental health disorders at health center visits by adults with attention-deficit/hyperactivity disorder: United States, 2023



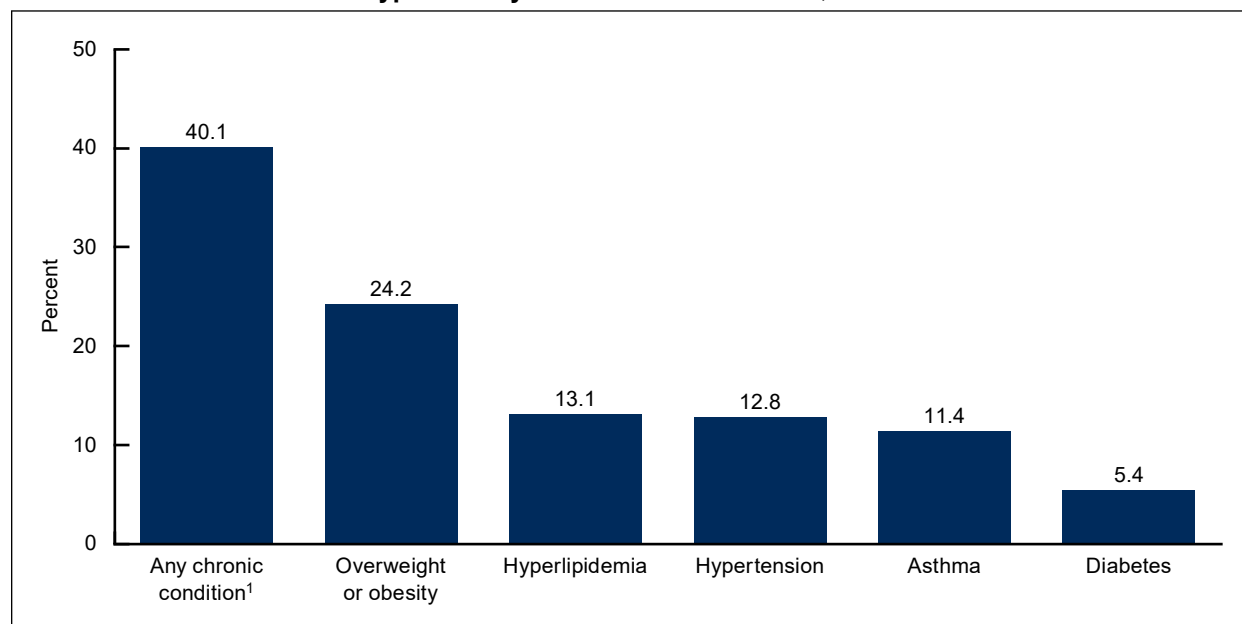
NOTES: In 2023, adults age 18 and older with attention-deficit/hyperactivity disorder (ADHD) made 108,590 visits to health centers. For this figure, health centers at which all diagnoses were missing for all visits ($n = 4$) were excluded and visit weights for the remaining health centers were normalized to account for those excluded, representing about 1.4 million health center visits (1.4% of all visits by adults). Visits with ADHD were defined as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD-10-CM) diagnosis code of F90. The "any mental health disorder" category includes only the disorders shown, which were identified using the following ICD-10-CM codes: anxiety disorders, F40–F48; mood disorders, F30–F39; substance use disorders, F10–F19; behavioral syndromes associated with physiological disturbances and physical factors (behavioral syndromes), F50–59; and disorders of adult personality and behavior (personality disorders), F60–F69.

SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2023.

Co-diagnosis of chronic conditions

- Among health center visits by adults with ADHD, 24.2% had a co-diagnosis of overweight or obesity, 13.1% hyperlipidemia, 12.8% hypertension, 11.4% asthma, and 5.4% diabetes ([Figure 3](#), [Table 3](#)).
- An estimated 40.1% of health center visits by adults with ADHD included documentation in the EHR of a co-diagnosis of any selected chronic condition not related to mental health.

Figure 3. Co-diagnosis of chronic conditions not related to mental health at health center visits by adults with attention-deficit/hyperactivity disorder: United States, 2023



¹Includes only the five conditions shown here and does not include chronic conditions related to mental health.

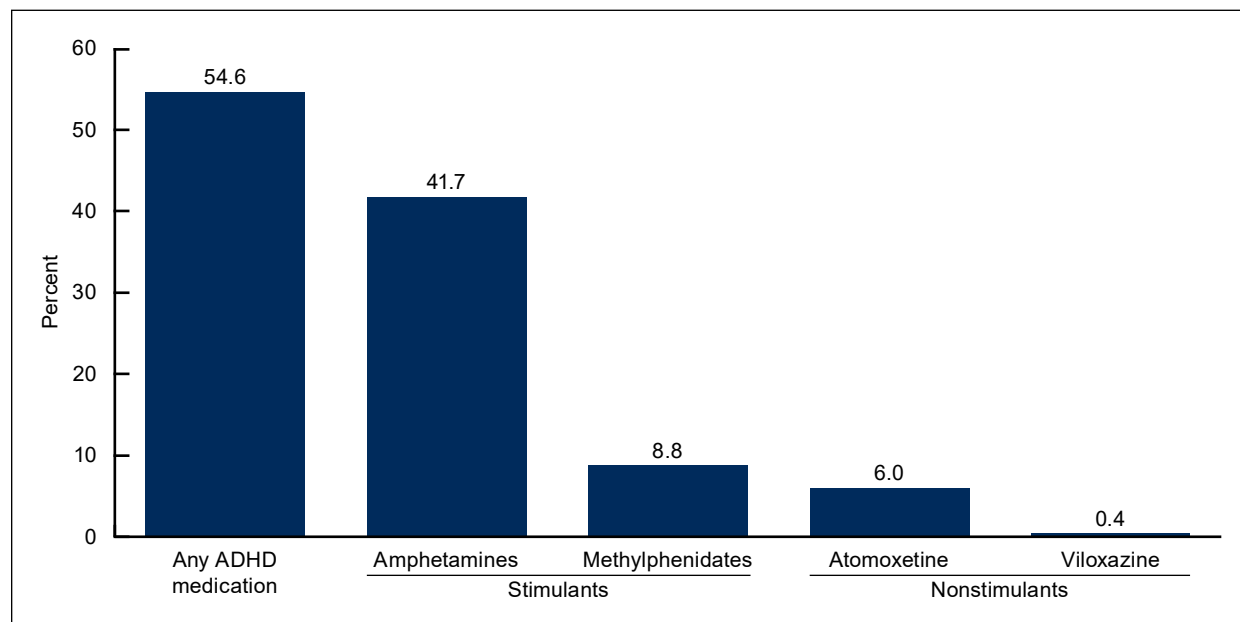
NOTES: In 2023, adults age 18 and older with attention-deficit/hyperactivity disorder (ADHD) made 108,590 visits to health centers. For this figure, health centers at which all diagnoses were missing for all visits ($n = 4$) were excluded and visit weights for the remaining health centers were normalized to account for those excluded, representing about 1.4 million health center visits (1.4% of all visits by adults). Visits with ADHD were defined as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD-10-CM) diagnosis code of F90. The "any chronic condition" category includes only the chronic conditions shown, which were identified using the following ICD-10-CM codes: overweight or obesity, E66, Z68.25–Z68.29, Z68.3, Z68.4; hyperlipidemia, E78.0–E78.5; hypertension, H35.00, H35.031, H35.032, H35.033, H35.039, I10–I15, I1A.0–I67.4, N26.2; asthma, J45; and diabetes, E08–E13.

SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2023.

Documented prescriptions

- A prescription for the stimulant medication amphetamine was documented in the EHR at 41.7% of health center visits by adults with ADHD, while the stimulant medication methylphenidate was documented at 8.8% of visits (Figure 4, Table 4).
- A prescription for the nonstimulant medication atomoxetine was documented at 6.0% of health center visits by adults with ADHD, while the nonstimulant medication viloxazine was documented at 0.4% of ADHD visits.
- Among health center visits by adults with ADHD, an estimated 54.6% had a documented prescription for any of the selected ADHD medications.

Figure 4. Percentage of health center visits by adults with attention-deficit/hyperactivity disorder with a documented ADHD medication: United States, 2023



NOTES: In 2023, adults age 18 and older with attention-deficit/hyperactivity disorder (ADHD) made 108,590 visits to health centers. For this figure, health centers at which all diagnoses and all medications were missing for all visits ($n = 20$) were excluded and visit weights for the remaining health centers were normalized to account for those excluded, representing about 1.4 million health center visits (1.4% of all visits by adults). Visits with ADHD were defined as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD-10-CM) diagnosis code of F90. RxNorm concept codes were used to identify stimulant and nonstimulant medications documented in the electronic health record (EHR) for each visit. The “any ADHD medication” category includes only the medications shown. Medications were included if they had an active or completed label in the EHR, and medications with a missing or suspended label were removed. Medications may have been retained in the EHR from a previous visit.

SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2023.

Summary

This report presents nationally representative estimates of health center visits by adults with diagnosed ADHD in the United States during 2023. The overall rate of health center visits among adults with diagnosed ADHD during 2023 was 52.6 visits per 10,000 adults. The health center visit rate for adults with ADHD decreased with age. Almost 70% of the visits by adults with ADHD had any of the selected diagnosed mental health disorders documented in the EHR, including anxiety and mood disorders, and about 40% of visits by adults with ADHD had selected diagnosed chronic conditions not related to mental health documented in the EHR, including overweight or obesity. About 55% of visits by adults with ADHD had at least one documented prescription for an ADHD medication, of which amphetamines were the most common, documented at 41.7% of ADHD visits.

Definitions

ADHD medications: Includes ADHD medications approved by the Food and Drug Administration for adults (5), categorized as stimulant and nonstimulant medications. Visits with a documented prescription were included when the RxNorm code had an active or completed label in the EHR. Although the medication status of “active” or “complete” indicates that the patient had a prescription for that medication, the prescription could have been given at an

earlier visit. The list of RxNorm concept codes used to identify medications was obtained from: <https://www.nlm.nih.gov/research/umls/rxnorm/index.html>. The “any ADHD medication” category included any of the medications shown in Figure 4, and the amphetamines category included amphetamine, amphetamine-dextroamphetamine, or lisdexamfetamine. Medications were documented in the EHR data using two different coding systems: RxNorm and National Drug Code (NDC). Applying Natural Language Processing techniques, missing medication codes and medications coded in NDC were repopulated by matching the medication name when available with a standardized RxNorm code. This process affected 5.7% of all medication records and resulted in an updated list of RxNorm medications. In this report, only the updated list of RxNorm codes was used to identify ADHD medications. More information is described elsewhere (4).

ADHD visit: All visits that contained an *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD–10–CM) diagnosis code of F90 are included (6), because the data do not specify a primary diagnosis. Historical diagnoses established before the current visit may also have been included.

Chronic conditions not related to mental health: To identify the top five chronic conditions not related to mental health, 16 conditions were examined from the Office of the Assistant Secretary for Health list of chronic conditions (7) and ICD–10–CM definitions available from the Centers for Medicare & Medicaid Services Chronic Conditions Data Warehouse (8). The 16 conditions are: Alzheimer disease, arthritis, asthma, atrial fibrillation, cancer, chronic kidney disease, chronic obstructive pulmonary disease, chronic viral hepatitis, diabetes, heart failure and nonischemic heart disease, HIV, hyperlipidemia, hypertension, ischemic heart disease, osteoporosis, and stroke or transient ischemic attack. Overweight or obesity was added to the chronic conditions list based on previous studies showing a possible correlation with ADHD (9). The top five chronic conditions are shown in Figure 3, and the “any chronic condition” category includes only those five conditions, which were identified using the following ICD–10–CM codes: overweight or obesity (E66, Z68.25–Z68.29, Z68.3, Z68.4); hyperlipidemia (E78.0–E78.5); hypertension (H35.00, H35.031, H35.032, H35.033, H35.039, I10–I15, I1A.0–I67.4, N26.2,); asthma (J45); and diabetes (E08–E13).

Health center: A local, community-based clinic that provides care to those who often encounter issues accessing health care (3). Health centers treat medical, dental, mental health, substance use, and other health care needs. Staff include doctors, dentists, therapists, social workers, eye doctors, obstetricians/gynecologists, pediatricians, case managers, and other medical staff (3). Both federally qualified health centers, which received Section 330 funding from the Health Resources and Services Administration (HRSA), and health center program look-alikes, which met qualifications but did not receive HRSA program funding (10), were included in the sample.

Mental health disorders: To identify the top five mental health disorders, all mental health disorders identified by ICD–10–CM diagnosis codes F01–F99 were examined, excluding the ICD–10–CM code for ADHD (F90). The top five subcategories of mental health disorders are shown in Figure 2, and the “any mental health disorder” category includes only those five disorders, which were identified using the following ICD–10–CM codes: anxiety disorders (F40–F48); mood disorders (F30–F39); substance use disorders (F10–F19); behavioral syndromes

associated with physiological disturbances and physical factors disorders (behavioral disorders) (F50–F59), and disorders of adult personality and behavior (personality disorders) (F60–F69).

Visit rate: Calculated by dividing estimates of visits by the number of the U.S. civilian noninstitutionalized population (11) for the age group.

Data source and methods

Data for this report are from the 2023 NAMCS HC Component, and 95 health centers participated out of the 315 health centers that were contacted to participate, resulting in a response rate of 30.2% (unweighted). In 2023, 64 health centers were newly recruited, of which 27 responded (42.2%). Additionally, of the 64 health centers that previously participated in 2022, 63 continued participation in 2023 (98.4%). Participating health centers submitted data for all visits that occurred in 2023, which consisted of more than 9 million visits (unweighted). ICD–10–CM diagnosis codes were used to define ADHD, mental health disorders, and chronic conditions. Categories are not mutually exclusive, so the same visit may be represented in multiple categories of mental health disorders, chronic conditions, and ADHD medications. Additional sampling design details for the NAMCS HC Component are described elsewhere (4,12,13).

Analyses for this report were conducted using data from the NAMCS HC Component restricted-use data file. A public-use version of this file that does not include medications is available from: https://www.cdc.gov/nchs/namcs/documentation/about-the-data-2023.html#cdc_data_surveillance_section_3-health-center-component. Count estimates and measures of variance may differ between restricted- and public-use files. Information on accessing the restricted-use data file is available from: https://www.cdc.gov/rdc/restricted-nchs-variables/namcs-nhamcs.html?CDC_AAref_Val=https://www.cdc.gov/rdc/b1datatype/dt1224a.htm. Data analyses were performed using the statistical packages SAS version 9.4 (SAS Institute, Cary, N.C.) and SAS-callable SUDAAN version 11.0 (RTI International, Research Triangle Park, N.C.). Two-tailed *t* tests with a significance level of $p < 0.05$ were used to determine statistically significant differences. All estimates presented meet NCHS data presentation standards for proportions and rates (14,15).

Weighting was conducted to account for sampling probabilities and nonresponse, resulting in nationally representative estimates of health center visits to all states and the District of Columbia (4). For diagnosis and medication variables, in certain instances these data were missing from all visits submitted by some of the participating health centers. In these instances, health centers with complete missingness for variables of interest were excluded from analysis, and the visit weights were normalized to account for their exclusion (4,12).

About the authors

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Figure tables

Data table for Figure 1. Visit rate by adults with attention-deficit/hyperactivity disorder at health centers, by age group: United States, 2023

Age group	Visit rate per 10,000 adults	95% confidence interval
Total	52.6	39.3–70.3
18–24	192.6	68.2–125.8
25–49	79.6	59.6–106.2
50–64	29.5	21.1–41.3
65 and older	6.5	4.4–9.8

¹Significant decreasing trend with increasing age ($p < 0.05$).
NOTES: In 2023, adults age 18 and older with attention-deficit/hyperactivity disorder (ADHD) made 108,590 visits to health centers. For this table, health centers at which all diagnoses were missing for all visits ($n = 4$) were excluded and visit weights for the remaining health centers were normalized to account for those excluded, representing about 1.4 million health center visits (1.4% of all visits by adults). Visits with ADHD were defined as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* diagnosis code of F90. Visit rates were based on estimates of the U.S. civilian noninstitutionalized population developed by the U.S. Census Bureau. Rates reflect the population as of July 1, 2023.
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2023.

Data table for Figure 2. Co-diagnosis of mental health disorders at health center visits by adults with attention-deficit/hyperactivity disorder: United States, 2023

Mental health disorder	Percent	95% confidence interval
Any mental health disorder	69.6	62.1–76.4
Anxiety disorders	51.2	44.3–58.2
Mood disorders	48.8	42.0–55.6
Substance use disorders	23.8	16.8–32.0
Behavioral syndromes	6.8	4.6–9.7
Personality disorders	6.5	4.2–9.5

NOTES: In 2023, adults age 18 and older with attention-deficit/hyperactivity disorder (ADHD) made 108,590 visits to health centers. For this table, health centers at which all diagnoses were missing for all visits ($n = 4$) were excluded and visit weights for the remaining health centers were normalized to account for those excluded, representing about 1.4 million health center visits (1.4% of all visits by adults). Visits with ADHD were defined as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD–10–CM) diagnosis code of F90. The “any mental health disorder” category includes only the disorders shown, which were identified using the following ICD–10–CM codes: anxiety disorders, F40–F48; mood disorders, F30–F39; substance use disorders, F10–F19; behavioral syndromes associated with physiological disturbances and physical factors (behavioral syndromes), F50–F59; and disorders of adult personality and behavior (personality disorders), F60–F69.
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2023.

Data table for Figure 3. Co-diagnosis of chronic conditions not related to mental health at health center visits by adults with attention-deficit/hyperactivity disorder: United States, 2023

Chronic condition	Percent	95% confidence interval
Any chronic condition	40.1	33.7–46.9
Overweight or obesity	24.2	19.4–29.4
Hyperlipidemia	13.1	9.7–17.3
Hypertension	12.8	10.0–16.0
Asthma	11.4	8.6–14.9
Diabetes	5.4	3.7–7.6

NOTES: In 2023, adults age 18 and older with attention-deficit/hyperactivity disorder (ADHD) made 108,590 visits to health centers. For this table, health centers at which all diagnoses were missing for all visits ($n = 4$) were excluded and visit weights for the remaining health centers were normalized to account for those excluded, representing about 1.4 million health center visits (1.4% of all visits by adults). Visits with ADHD were defined as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD–10–CM) diagnosis code of F90. The “any chronic condition” category includes only the chronic conditions shown, which were identified using the following ICD–10–CM codes: overweight or obesity, E66, Z68.25–Z68.29, Z68.3, Z68.4; hyperlipidemia, E78.0–E78.5; hypertension, H35.00, H35.031, H35.032, H35.033, H35.039, I10–I15, I1A.0–I67.4, N26.2; asthma, J45; and diabetes, E08–E13.

SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2023.

Data table for Figure 4. Percentage of health center visits by adults with attention-deficit/hyperactivity disorder with a documented ADHD medication: United States, 2023

ADHD medication	Percent	95% confidence interval
Any ADHD medication	54.6	44.1–64.8
Stimulants:		
Amphetamine	41.7	33.8–50.0
Methylphenidate	8.8	6.8–11.0
Nonstimulants:		
Atomoxetine	6.0	4.2–8.3
Viloxazine	0.4	0.2–0.6

NOTES: In 2023, adults age 18 and older with attention-deficit/hyperactivity disorder (ADHD) made 108,590 visits to health centers. For this table, health centers at which all diagnoses and all medications were missing for all visits ($n = 20$) were excluded and visit weights for the remaining health centers were normalized to account for those excluded, representing about 1.4 million health center visits (1.4% of all visits by adults). Visits with ADHD were defined as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD–10–CM) diagnosis code of F90. RxNorm concept codes were used to identify stimulant and nonstimulant medications documented in the electronic health record (EHR) for each visit. The “any ADHD medication” category includes only the medications shown. Medications were included if they had an active or completed label in the EHR, and medications with a missing or suspended label were removed. Medications may have been retained in the EHR from a previous visit.

SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2023.

Suggested citation

Ashman JJ, Santo L, Peters ZJ, Okeyode T, Gidali D. Visits to health centers by adults with attention-deficit/hyperactivity disorder: United States, 2023. NCHS Data Brief. 2025 Dec;(543):1–12. DOI: <https://dx.doi.org/10.15620/cdc/174629>.

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ISSN 1941–4927 Print ed. | ISSN 1941–4935 Online ed.

CS362504