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Pediatric Primary Care Visits With Mental Health Needs

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Introduction

Mental, behavioral, and developmental disorders affect 28% of children in the US,[1] with nearly 50% not receiving treatment when needed.[2,3] Although office-based outpatient mental health (MH) visits among adolescents have doubled in the US from 2006 to 2019,[4] there is limited evidence about the extent to which MH issues present within pediatric primary care, where integrating MH services into primary care is a potential solution to increase access to MH care.[5,6] Our objective was to estimate temporal trends in pediatric primary care visits that included MH issues (ie, visits with billed MH diagnosis codes), using all-payer data from Massachusetts.

Methods

In this cohort study, using the 2014 to 2023 Massachusetts All-Payer Claims Database, with person-quarter as the unit of analysis, we identified a study population of children, adolescents, and young adults aged 1 to 18 years (hereafter, *children*) who resided in Massachusetts; they were included in the denominator in quarters in which they were enrolled in insurance (Medicaid or private). Our primary outcome was number of all primary care practitioner (PCP) visits with any MH diagnosis per

Table. Study Population Characteristics: Insured Children, Adolescents, and Young Adults in Massachusetts (2014-2023)

Characteristic	Overall (2014-2023)	Quarter 1[a]	
		2014	2023
Total person-quarters, No.	37 659 240	1 041 783	887 361
Age, mean (SD), y	9.5 (5.1)	9.2 (5.0)	9.7 (5.1)
Age group, No. (%)			
1-5 y	10 272 037 (27.3)	298 732 (28.7)	227 378 (25.6)
6-12 y	14 925 496 (39.6)	423 938 (40.7)	350 723 (39.5)
13-18 y	12 461 710 (33.1)	319 113 (30.6)	309 260 (34.9)
Sex, No. (%)			
Male	19 042 273 (50.7)	519 738 (50.0)	451 841 (51.0)
Female	18 537 401 (49.3)	519 122 (50.0)	434 028 (49.0)
Zip code characteristics[b]			
Rural zip code, No. (%)	3 335 601 (8.9)	96 022 (9.2)	78 620 (8.9)
Families below the federal poverty level, mean (SD), %	9.3 (8.0)	8.2 (5.1)	9.6 (8.1)
Residents who are Black, non-Hispanic, mean (SD), %	9.0 (13.7)	7.9 (12.9)	9.1 (13.8)
Residents who are Hispanic, mean (SD), %	14.8 (18.0)	12.7 (16.5)	15.4 (18.3)
Residents who are White, non-Hispanic, mean (SD), %	67.9 (24.9)	70.8 (23.7)	67.3 (25.0)
Insurance type, No. (%)[c]			
Medicaid	22 101 170 (41.3)	381 720 (36.6)	616 173 (69.4)
Private	15 558 070 (58.7)	660 063 (63.4)	271 188 (30.6)
Primary care practice type, No. (%)[d]			
FQHC	4 098 861 (14.1)	37 793 (12.2)	107 019 (15.3)
Non-FQHC	24 885 954 (85.9)	273 080 (87.8)	592 111 (84.7)

Abbreviation: FQHC, federally qualified health center.

[a] Person-quarter estimates represent quarter 1 in the individual years and, thus, are smaller than the total number within the year.

[b] Zip code rurality as classified by the Massachusetts State Office of Rural Health. Zip code–level sociodemographic characteristics were ascertained from the 2018 American Community Survey, and merged with member zip code. American Community Survey data are self-reported.

[c] Shifts in the distribution of children by insurance type over time are due to the 2016 *Gobeille v Liberty Mutual* Supreme Court ruling that resulted in self-funded plans no longer being required to submit claims data to state all-payer claims databases; however, while the percentage of observed children enrolled in private coverage decreased between 2015 and 2016, this does not explain observed results.

[d] Among person-quarters with a known, attributed primary care practice.

+ Supplemental content

Author affiliations and article information are listed at the end of this article.

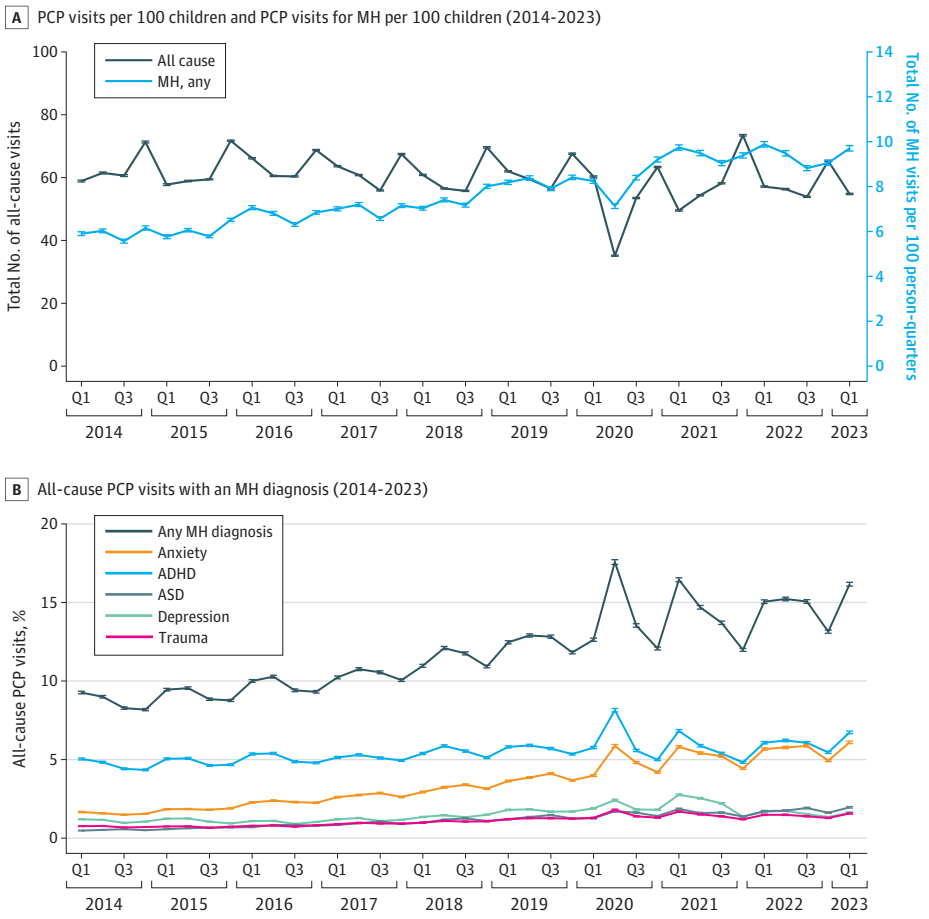
100 insured children per quarter. Secondary outcomes were number of all-cause PCP office visits per 100 children and percentage of PCP visits with diagnoses for attention-deficit/hyperactivity disorder (ADHD), depression, anxiety, autism spectrum disorder (ASD), and trauma or stressor-related disorders—the 5 most prevalent MH visit diagnoses in our study population, which are also commonly managed in primary care settings. For further details on inclusion criteria and outcome definitions, see eMethods 1 to 3 and the eTable in Supplement 1. The Boston University institutional review board approved this cohort study and waived informed consent because the study used existing records. We followed the STROBE reporting guideline.

Data were analyzed in October 2025 using Stata, version 18 (StataCorp). We used generalized linear models with a gaussian distribution and identity link to assess outcomes quarter over quarter, controlling for patient age, sex, insurance type, and rurality, which were time variant, with standard errors clustered at the person level. Marginal effects were generated and graphed.

Results

The study sample included 37 659 240 person-quarters, representing 1 848 249 unique children. The mean (SD) age was 9.5 (5.1) years, 50.7% were male and 49.3% were female, and 41.3% were enrolled in Medicaid (**Table**). The rate of PCP visits with any MH diagnosis increased from 5.9 (95% CI, 5.8-6.0) visits per 100 children in quarter 1 of 2014 to 9.7 (95% CI, 9.6-9.8) visits per 100 children in quarter 1 of 2023 (**Figure**, A). When examining changes over time by diagnosis type (Figure, B),

Figure. Line Graphs Showing Trends in Pediatric Primary Care Practitioner (PCP) Visits With Mental Health (MH) Diagnoses (2014-2023)



Trends are shown across all privately insured and Medicaid-insured children, adolescents, and young adults aged 1 to 18 years (hereafter, *children*) who reside in Massachusetts, as derived from the Massachusetts All-Payer Claims Database. The unit of analysis was the person-quarter. All trends were estimated using generalized linear models with gaussian distribution and identity link, with adjustments for age, sex, insurance type, and rurality, and standard errors clustered at the person-level. ADHD indicates attention-deficit/hyperactivity disorder; ASD, autism spectrum disorder; and Q, quarter.

absolute changes were greatest for PCP visits for anxiety (from 1.7% [95% CI, 1.6%-1.7%] of PCP visits in quarter 1 of 2014 to 6.1% [95% CI, 6.0%-6.2%] of PCP visits in quarter 1 of 2023). Increases in the percentage of PCP visits with MH diagnoses from quarter 1 of 2014 to quarter 1 of 2023 were observed for all other diagnosis types, albeit smaller in magnitude, including for ADHD (from 5.0% [95% CI, 5.0%-5.1%] to 6.7% [95% CI, 6.6%-6.8%]), depression (from 1.2% [95% CI, 1.2%-1.2%] to 1.6% [95% CI, 1.6%-1.7%]), ASD (from 0.5% [95% CI, 0.5%-0.5%] to 2.0% [95% CI, 1.9%-2.0%]), and trauma and stressor-related disorders (from 0.8% [95% CI, 0.7%-0.8%] to 1.6% [95% CI, 1.5%-1.6%]). When population-level rates of pediatric primary care use (Figure, A) were examined, the total number of all-cause PCP visits decreased slightly, from 58.9 (95% CI, 58.6-59.2) visits per 100 children in quarter 1 of 2014 to 54.8 (95% CI, 54.6-55.0) per 100 children in quarter 1 of 2023.

Discussion

In this cohort study of insured children in Massachusetts, we found that the rate of PCP visits with MH issues increased from 2014 to 2023. Increases were greatest for PCP visits related to anxiety—a 300% relative increase over 10 years—while ADHD remained the most common pediatric MH need at PCP visits. Observed trends may reflect increases in the underlying prevalence of pediatric MH needs alongside increases in PCP capacity to screen for and address MH needs. Limitations of the study include that our results are limited to Massachusetts; claims data are used for billing purposes, which may result in incomplete data on diagnoses; and results do not explore heterogeneity by patient subgroup or practice type, which should be explored in future research. Nonetheless, results suggest the need for additional MH training and clinical service capacity to screen, diagnose, and treat MH conditions within pediatric primary care settings—such as through integrated MH models—especially for anxiety and ADHD.

ARTICLE INFORMATION

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SUPPLEMENT 1.

eMethods 1. Explanation of Insurance Type Inclusion
eMethods 2. Zip Code–Level Variable Definitions and Measurement
eMethods 3. Claims-Based Outcome Definitions
eTable. Mental Health Diagnosis Codes for Top 5 Diagnosis Categories

SUPPLEMENT 2.

Data Sharing Statement