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Patient-Centered Medical Home Care for Adolescents in Need of Mental Health Treatment

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Abstract

Purpose—The patient-centered medical home (PCMH) has emerged as an optimal primary care model for all youth; however, little is known about the extent to which adolescents in need of mental health (MH) treatment receive care consistent with the PCMH. This study assessed (1) 10-year trends in PCMH care among U.S. adolescents according to MH need and (2) variations in PCMH care and its subcomponents among adolescents with MH need, by individual and family characteristics.

Methods—This was a secondary analysis of Medical Expenditure Panel Survey data (2004–2013). The sample included adolescents aged 12–17 years with 1 office-based visits in the past year (N = 18,717). Questions assessing a usual source of care and care that is accessible, comprehensive, family-centered, and compassionate were used to define PCMH care. For adolescents with MH needs, multivariable logistic regression was used to describe the association between PCMH care and sample characteristics.

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Results—Fifty percent of adolescents experienced PCMH care, with little change between 2004 and 2013. Adolescents with MH need (N = 3,794) had significantly lower odds of experiencing PCMH care compared with those without MH need (odds ratio, .78; 95% confidence interval, .69–.87). Among adolescents with MH needs, being uninsured and living with a parent who did not graduate high school were negatively associated with PCMH care, whereas parental usual source of care was positively associated (odds ratio, 1.69; 95% confidence interval, 1.28–2.22).

Conclusions—Increasing care accessibility, integrating MH services into primary care settings, and targeting socioeconomically disadvantaged subgroups could improve rates of PCMH care among adolescents with MH needs.

Keywords

Medical home; Mental disorders; Primary care; Adolescents

Up to 20% of children and adolescents in the United States experience a mental health (MH) disorder in a given year, and the prevalence of MH disorders is increasing [1]. Common MH disorders include attention deficit hyperactivity disorder, depression, anxiety disorder, and conduct disorder, with most of these disorders emerging during adolescence [2]. Left untreated, these disorders can result in drug or alcohol abuse, poor mental and physical health outcomes, and socioeconomic disadvantage in adulthood [3,4]. Thus, the identification and treatment of MH disorders during adolescence are crucial to healthy adolescent and adult development. Despite the availability of effective treatments, only one third of adolescents with MH disorders receive treatment [5]. Fragmented systems of care, a lack of child-trained MH specialists, stigma around mental illness, and cost concerns create barriers to treatment [6–9].

To address these barriers, the American Academy of Child and Adolescent Psychiatry, the American Academy of Pediatrics (AAP), and others recommend that primary care practices implement processes to provide and/or coordinate MH services for adolescents [10–12]. Affordable Care Act delivery-system reforms such as the patient-centered medical home (PCMH) also support improved coordination and integration of MH services in primary care settings [11,13]. Initially developed in the 1960s as a model to improve care coordination for children with special health-care needs [14,15], the PCMH is now widely recommended as an optimal model of high-quality primary care for all children. Under this model, a multidisciplinary team that includes an assigned primary care provider maintains overall responsibility for a patient’s physical and MH care, including coordination with specialty providers [16,17]. The AAP defines the PCMH as a usual source of care (USC) that is accessible, comprehensive, continuous, coordinated, family centered, compassionate, and culturally effective [15].

All components of a PCMH are relevant to adolescents with MH disorders. Enhanced accessibility (eg, open scheduling, expanded office hours) could result in less delayed and forgone care. Comprehensive care (ie, care that accounts for adolescents’ physical and MH needs) could increase early identification and receipt of MH treatment. Adolescents with MH disorders often have a substantial need for care coordination [18]. For these youth, assistance in obtaining referrals for MH specialty care and tracking follow-up may increase

the likelihood that youth will receive services. Care that is family centered (ie, care that recognizes and values the family's treatment preferences and role in decision making) and compassionate could increase treatment initiation and adherence by promoting trust and respect [19].

Despite the potential value of the PCMH for adolescents with MH needs, evidence demonstrating its effectiveness in increasing access to and receipt of MH services is limited and inconclusive [20,21]. Additionally, research suggests that children and adolescents with MH disorders are less likely to experience PCMH care both in the general pediatric population [22–24] and among youth with special health-care needs (CSHCN) [25,26]. To our knowledge only one study has examined the prevalence of PCMH care specifically among adolescents: a 2007 cross-sectional study by Adams et al. found that adolescents aged 10–17 with any type of MH disorder were significantly less likely to have received PCMH care compared with those with a physical disorder (46% vs. 56%) [22]. Given the growing number of initiatives and resources invested into implementing the PCMH, it is unknown how the prevalence of PCMH care may have changed over time for adolescents with MH needs. This information could be used to help ensure that efforts to deliver PCMH care are effectively reaching adolescents with MH disorders.

This study adds to the literature on PCMH care for adolescents in need of MH treatment (herein MH need) by (1) estimating cross-sectional trends over time in the prevalence of PCMH care using a nationally representative sample and (2) identifying which adolescent and family characteristics are associated with experiencing PCMH care and each PCMH component.

Study hypotheses were that (1) the proportion of all adolescents receiving PCMH care will have increased between 2004 and 2013; (2) adolescents with MH needs would be less likely to experience PCMH care compared with those without MH needs; and (3) the likelihood of PCMH care and each PCMH component would vary by adolescent and family characteristics.

Methods

Study design and data source

The study was a retrospective cross-sectional analysis of the 2004–2013 Medical Expenditure Panel Survey (MEPS) (Household Component Full-Year Consolidated Data Files). The MEPS is an ongoing, nationally representative survey of the noninstitutionalized U.S. population that collects detailed information on respondents' demographics, health-care utilization and expenditures, self-reported physical and MH status, insurance coverage, and socioeconomic status five times over a 2-year period. The MEPS uses a rotating panel sampling design, such that each year of data includes two overlapping sample panels with staggered entry into the survey. A common variance structure that treats each response as independent permits the pooling of overlapping panels [27].

Information for individuals 18 years old are reported by an adult survey respondent. Technical information regarding the MEPS survey sampling design and nonresponse

adjustment are provided elsewhere [28]. The annual response rate ranged from 52.8% to 68.2% between 2004 and 2013. Given that MEPS data are de-identified and publicly available, this study was deemed exempt by Northwestern University's Institutional Review Board.

Study sample

A total of 19,434 adolescents aged 12–17 years with at least one office-based visit were initially identified from survey years 2004–2013. Of these youth, 717 (3.7%) were excluded due to incomplete data on study variables. The final study sample included a total of 18,717 adolescents (Figure 1).

Measures

Patient-centered medical home and patient-centered medical home

components—The primary outcome was parent or caregiver report of the adolescent's PCMH care experience, operationalized as a binary indicator. Using previously established criteria [29], a PCMH was defined as having (1) a USC and (2) an average score of ≥ 75 for four of the seven AAP-recommended PCMH components: accessible care, comprehensive care, family-centered care, and compassionate care. The continuous and coordinated care components could not be derived from the MEPS because there were no survey items representing these components. Culturally effective care could not be measured due to the large number of missing responses to questions comprising this component.

An adolescent is deemed to have not received PCMH care if there are missing data in the survey items that cannot qualify as a legitimate skip. If items comprising a component were legitimately skipped (eg, receiving referrals only applies to adolescents needing referrals), then the adolescent was considered to have met criteria for that component and PCMH care was determined based on meeting criteria for the remaining components. This method of identifying PCMH care has been used in prior studies [30]. MEPS survey items used to define each PCMH component, and scoring details are provided in Supplementary Table S1.

Mental health need—MH need (yes/no) was assessed using the following criteria established by Saloner et al. [31]: (1) a composite score on the Columbia Impairment Scale (CIS) of ≥ 16 , with higher scores indicating more severe impairment, and/or (2) fair or poor MH status, and/or (3) an “emotional, developmental, or behavioral problem for which he or she needs or gets treatment or counseling.” The parent-administered CIS is a 13-item measure of child and adolescent interpersonal relations, psychopathological symptoms, school functioning, and use of leisure time [32]. At a cutoff score of 16, the CIS has moderate agreement with structured DSM diagnoses in a pediatric sample and is correlated with clinician-rated impairment [33]. This cutoff score has been used as an indicator of MH treatment need in other studies [34].

Covariates—Andersen's health behavior model [35] was used to select covariates (eg, predisposing characteristics, enabling factors, and need characteristics) that have been shown in prior studies to differentially affect youth's access to PCMH care [36,37].

Predisposing characteristics include adolescents' age, sex, race/ethnicity, language spoken at home, and geographic region of residence. Race/ethnicity included Hispanic, non-Hispanic white, non-Hispanic black, and non-Hispanic other. Language spoken at home was English versus another language. Geographic region included the Northeast, Midwest, South, and West. Strickland et al. found that youth who were Hispanic or non-Hispanic black, from a non-English-speaking household, and living the Western United States had a lower prevalence of PCMH care [37].

Enabling variables included adolescent's health insurance status, family size (continuous), family income as a percentage of the federal poverty level (FPL), and several parental variables: age (continuous), education level, insurance status, presence of a USC, marital status, physical and MH status (excellent/very good, good, fair/poor), and employment status (employed vs. unemployed). Family income was assessed using the following five levels: poor (<100% FPL), near poor (100%–124% FPL), low income (125%–199% FPL), middle income (200%–399% FPL), and high income (>400% FPL). Adolescent and parent insurance status were categorized as private, public, or uninsured. Parent education level was assessed with four categories: high school, high school graduate (or equivalent), some college, 4 years of college. Prior studies have shown that youth who are uninsured or publicly insured, living with a parent who did not graduate high school, and from families with incomes at <100% of the FPL were disproportionately less likely to have experienced PCMH care [36,37].

Need characteristics included the presence of special health-care need status (defined as youth “who have or are at increased risk for chronic physical, developmental, behavioral, or emotional disorders and who require health and related services of a type or amount beyond that required by children generally”) [38] and parent/caregiver report of an adolescent's physical and MH status.

Analysis

Descriptive statistics were computed for the study sample (N = 18,717), as well as among adolescents included versus excluded from the sample. Multivariable logistic regression was used to estimate the odds of PCMH care and each PCMH care component associated with MH need for the entire study sample, controlling for covariates.

For adolescents with MH needs, bivariate analyses were first conducted to describe the relationship between PCMH care and individual- and family-level characteristics by using χ^2 and *t*-tests for categorical and continuous variables, respectively. Multivariable logistic regression models were then used to determine which of these characteristics are independently associated with a PCMH and its five components. To adjust for potential secular changes between 2004 and 2013, the MEPS survey year was included in multivariable models as a covariate.

To assess trends over time in PCMH care prevalence, logistic regression was used to estimate the association between PCMH, survey year, and MH need. The regression model also included an interaction term to assess the temporal relationship between MH need and PCMH.

A sensitivity analysis was conducted to assess the impact of differences in skip patterns for specialty care on the relationship between MH need and comprehensive care. The likelihood of comprehensive care according to MH need was estimated separately for adolescents who endorsed needing specialty care and those who did not.

All analyses were conducted using Stata 14 (StataCorp, College Station, TX). Survey procedures were used to account for the weighting, clustering, and stratification in the survey design. The Taylor-series linearization method was used to adjust standard errors for the MEPS complex survey design [39].

Results

Sample characteristics

Table 1 describes the characteristics of the study sample (N = 18,717). The mean age was 14.5 years. An estimated 64% were white and non-Hispanic. The majority of adolescents had excellent/very good physical health and MH (80% and 77%, respectively), 19.8% had an MH need, and 30.6% had a special health-care need. Most adolescents resided in households where English was the primary language spoken (90%) and family income was 200% above the FPL (68.6%). Most had a parent who completed high school or higher (73.8%). Almost all adolescents had health insurance (95.0%), the majority of whom were privately insured (69.8%). Approximately 50% of all adolescents met criteria for PCMH care. Ninety-three percent reported a USC. Frequencies for each PCMH component ranged from 60% (accessible care) to 97% (compassionate care).

Adolescents excluded from the study because they did not meet study inclusion criteria were significantly less likely than those in the study sample to have had an MH need (12.4% vs. 20.4%), a special health-care need (10.2% vs. 31%), and a parent with a USC (70% vs. 82.4%). They were significantly more likely to have been nonwhite (54.6% vs. 36.5%), have been in excellent/very good physical health and MH, have been uninsured (13.9% vs. 5.1%), have been living in a non-English-speaking household (10.5% vs. 10.0%), have been from families with incomes at <100% FPL (27.3% vs. 19%), and have a parent without health insurance (21% vs. 14%).

Trends in the prevalence of patient-centered medical home care

Figure 2 shows that fewer adolescents with MH needs experienced PCMH care compared with those without MH needs between 2004 and 2013. In regression analyses, the likelihood of PCMH care was not significantly associated with time, nor did the likelihood vary over time by MH need (data not shown).

Odds of patient-centered medical home care and each patient-centered medical home care component

Table 2 shows that adolescents with MH needs were significantly less likely to have experienced PCMH care compared with those without MH needs (adjusted odds ratio [aOR], .71; 95% confidence interval [CI], .63–.80). They were also less significantly less likely to experience four PCMH care components: accessible care (aOR, .83; 95% CI, .74–.

94), family-centered care (aOR, .68; 95% CI, .57–.80), comprehensive care (aOR, .57; 95% CI, .48–.66), and compassionate care (aOR, .45; 95% CI, .34–.59).

Sensitivity analysis for the comprehensive care component revealed that the likelihood of comprehensive care is influenced by the need for specialty care. For adolescents who did not need specialty care, the likelihood of experiencing comprehensive care was not significantly associated with MH need.

Adolescents with mental health needs: prevalence and odds of patient-centered medical home care and each patient-centered medical home component

Table 3 shows disparities in the prevalence of PCMH care according to several adolescent and family characteristics. The lowest prevalence was observed among adolescents who were uninsured (29%) and living with a parent who did not have a USC (30%). The highest prevalence was observed among adolescents whose parent had completed 4 years of college (49.2%).

Table 4 shows the adjusted odds of PCMH care and each PCMH component by adolescent and family characteristics. Lowest odds of PCMH care were associated with being uninsured, living in the South and West U.S. regions, and having a parent who did not graduate from high school. Parental USC was significantly associated with a higher odds of adolescent PCMH (odds ratio, 1.69; 95% CI, 1.29–2.22). The odds of reporting accessible care were significantly higher among adolescents living with a parent who had a USC but significantly lower among adolescents living with a parent who did not graduate from high school, and among adolescents living in the South and West U.S. regions. Odds of reporting family-centered care were significantly higher among adolescents with a special health-care need; however, adolescents with a special health-care need had a lower probability of receiving comprehensive care. Having less than excellent or very good physical health was associated with lower odds of receiving compassionate care.

Discussion

This study provides an up-to-date assessment of trends in the prevalence of PCMH care and the correlates of PCMH care among adolescents with MH needs that had at least one office-based visit in the past 12 months. The prevalence of PCMH care among adolescents with MH needs was consistently lower than the prevalence among adolescents without MHs need from 2004 to 2013 and remained stable over this time period. The fact that there was no notable increase in the prevalence of PCMH care between 2004 and 2013 was somewhat surprising given its endorsement by the AAP and other professional medical organizations in 2007 and its inclusion in the 2010 Affordable Care Act.

Adolescents with MH needs, of whom two-thirds had a special health-care need, were significantly less likely to experience PCMH care relative to those without MH needs after controlling for potential confounding factors. They were also less likely to experience accessible, family-centered and compassionate care. Accessible care was the least frequently endorsed component. These findings are comparable with a prior study of PCMH care

among children with autism spectrum disorders, which showed that family-centered, comprehensive, and coordinated care were the least frequently reported components [25].

Among adolescents with MH needs, there were notable disparities in the likelihood of receiving care aligned with the PCMH model as a whole, as well as its subcomponents, particularly by insurance status, family income, and geographic region. Past studies in the general pediatric population have identified similar disparities in PCMH care [36,37]. Prior research on geographic disparities in PCMH care identified sociodemographic differences of children within different regions, differences in state-level publicly and privately funded health insurance policy, and supply of primary and MH specialty care providers for youth as factors contributing to regional variation [37].

Collectively these findings indicate that targeted efforts are needed to ensure adolescents with MH needs receive PCMH care, particularly disadvantaged subgroups. Results from our analysis of PCMH subcomponents suggest that making care more accessible, family centered, and compassionate could potentially increase the proportion of adolescents with MH needs who experience PCMH care. Strategies to enhance accessibility include offering extended weekday or weekend office hours, same-day sick visits, 24-hour telephone services, and telehealth visits. Health-care reform provisions such as the newly established insurance mandates could increase access to primary care, and by extension PCMH care. Similarly, ensuring that all family members have a USC might also improve access to PCMH care.

Training providers to involve adolescents and their caregivers in MH treatment decisions could improve patients' perceptions of family-centered care. Increasing pediatricians' knowledge and comfort in caring for adolescents with MH needs may improve their capacity to provide compassionate care and reduce stigma [24]. Integrating MH services into primary care, which includes screening for MH conditions, consultation/communication with MH specialists on treatment, and obtaining referrals for MH specialty treatment for those with moderate-to-severe psychiatric issues [40], may facilitate the delivery of comprehensive and coordinated care, two PCMH components that are vital for adolescents with MH needs.

This study has several limitations. First, MEPS items used to define PCMH (ie, care experience measures) do not fully capture all PCMH attributes defined by the AAP. Second, some of the items are not specific to adolescents with MH disorders, such as the need for specialty care. Third, it was not possible to measure integrated care processes that would likely impact parents' perception of PCMH care for adolescents with MH needs, such as the co-location of MH specialty providers.

Fourth, the items used to define PCMH and MH needs are subject to reporting error and bias; parent-, provider-, and system-level factors may bias parents' perception of their adolescent's PCMH care. Fifth, practice-level processes related to providing PCMH care, such as using an electronic health record system, patient registries, or team-led care, may not be known to parents. Sixth, adolescents must provide assent to parental reporting, which reduces the number of adolescents with data in the MEPS. Additionally, at older ages adolescents may obtain access to some services without their parent's knowledge. Both

factors may limit the generalizability of results. Results may also not be generalizable to adolescents who did not receive office-based care. Finally, the use of cross-sectional data permits the assessment of association, not causality.

Despite these limitations, analysis of the MEPS data is unique in its ability to produce nationally representative estimates and patients' perspectives on PCMH aspects of their care. As care delivery innovations such as the PCMH must ultimately reach the patient, it is important to incorporate patient perspectives in the assessment of such innovations [20].

Study results document significant shortcomings and disparities in receipt of care consistent with the PCMH model among adolescents with MH needs. In order for all children and adolescents to benefit from the PCMH model, implementation efforts should focus on increasing access to PCMH care among adolescents with MH needs and vulnerable subgroups within this population so that quality of care, and ultimately outcomes, are improved.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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IMPLICATIONS AND CONTRIBUTION

This study found that adolescents with MH needs were significantly less likely to experience care consistent with the PCMH model and its core components compared with adolescents without MH needs. Increasing care accessibility and targeting disadvantaged youth may improve receipt of PCMH care among adolescents with MH needs.

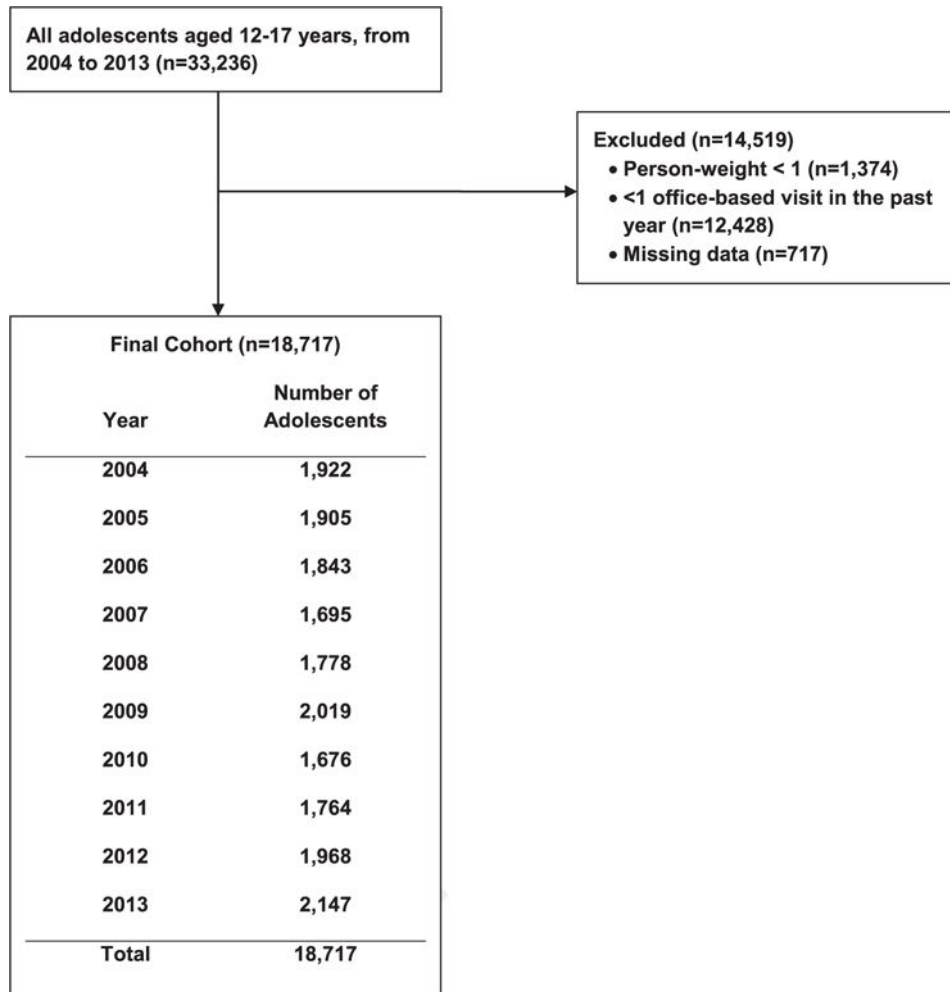


Figure 1.
Flow diagram of the study cohort.

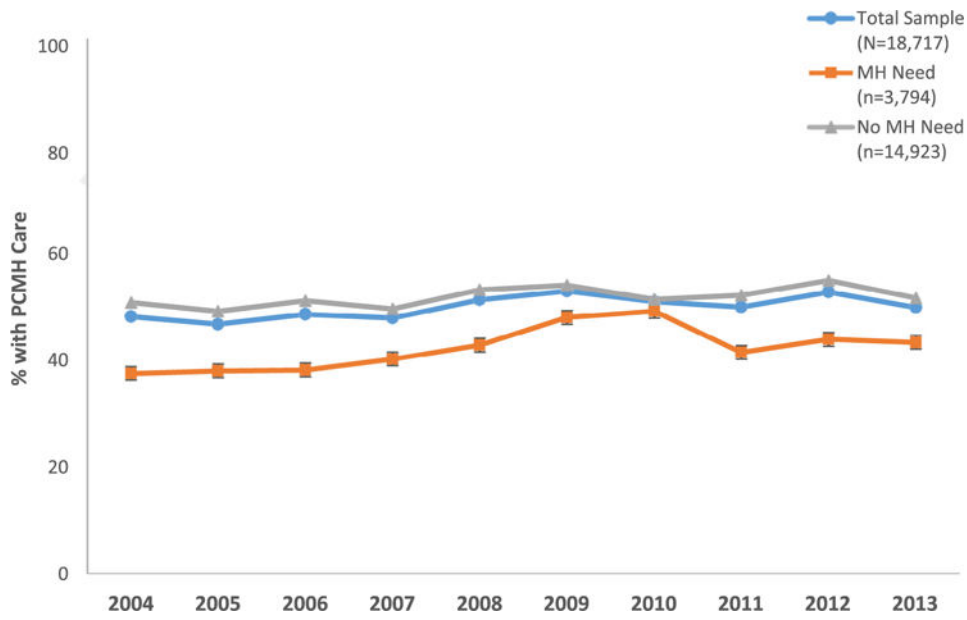


Figure 2. Proportion of adolescents with PCMH care, by mental health need, from 2004 to 2013.

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Table 1

All adolescents (N = 18,717): sample characteristics, PCMH care, and PCMH care components

Total sample (N = 18,717)		
	n	%
Adolescent characteristics ^a		
Probable mental health need (%) ^b	3,706	19.8
Age, mean (se)	18,717	14.5 (.02)
Gender (%)		
Female	9,336	49.9
Race/ethnicity (%)		
Non-Hispanic white	11,975	64.0
Non-Hispanic black	2,255	12.1
Non-Hispanic other	1,306	7.0
Hispanic	3,180	17.0
Language spoken at home (%)		
English	16,851	90.0
Other	1,867	10.0
Physical health status (%)		
Excellent/very good	14,949	79.9
Good	3,178	17.0
Fair/poor	590	3.2
Mental health status (%)		
Excellent/very good	14,472	77.3
Good	3,378	18.1
Fair/poor	868	4.6
Has a special health-care need (%)	5,720	30.6
Child health insurance status (%)		
Private	13,068	69.8
Public	4,705	25.1
Uninsured	942	5.0
Geographic region (%)		
Total sample (N = 18,717)		
Northeast	3,627	19.4
Midwest	4,457	23.8
South	6,508	34.8
West	4,123	22.0
Family characteristics		
Parent education level (%)		
Less than high school	4,898	26.2
High school/GED	4,239	22.7
Some college	4,511	24.1
4 years college	5,069	27.1

Total sample (N = 18,717)		
	n	%
Family size, mean (SE)	18,717	4.26 (.02)
Parent employment status (%)		
Employed	13,920	74.4
Unemployed	4,797	25.6
Family income (%)		
Poor (<100%)	2,517	13.5
Near poor (100%–124%)	810	4.3
Low (125%–199%)	2,555	13.7
Middle (200%–399%)	6,293	33.6
High (400%)	6,542	35.0
Parent marital status (%)		
Married	13,310	71.1
Not married	5,407	28.9
Parent usual source of care (%)	15,430	82.4
Parent insurance status (%)		
Private	13,948	74.5
Public	2,225	11.9
Uninsured	2,542	13.6
PCMH	9,330	49.9
Subcomponents		
Usual source of care	17,351	92.7
Accessible care	11,249	60.1
Family-centered care	16,097	86.0
Comprehensive care	16,615	88.8
Compassionate care	18,079	96.6

^aPer parent report.

^bDefined as (1) a composite score on the Columbia Impairment Scale (CIS) ≥ 16 , and/or (2) fair or poor MH status, and/or (3) an “emotional, developmental, or behavioral problem for which he or she needs or gets treatment or counseling.”

Table 2

Association between probable mental health need (yes/no) with odds of receiving PCMH care and each PCMH care component

	<u>OR (95% CI)</u>	<u>aOR (95% CI)^a</u>
PCMH (N = 18,717)	.68 (.61–.75)^b	.71 (.63–.80)^b
PCMH domain		
Usual source of care (N = 18,717)	1.03 (.85–1.24)	.97 (.75–1.26)
Accessible care (N = 18,717)	.8 (.72–.89) ^b	.83 (.74–.94) ^b
Family-centered care (N = 18,133)	.72 (.63–.83) ^b	.68 (.57–.80) ^b
Comprehensive care (N = 15,026)	.45 (.38–.52) ^b	.57 (.48–.66) ^b
Compassionate care (N = 15,756)	.37 (.29–.47) ^b	.45 (.34–.59) ^b

aOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio; PCMH, patient-centered medical home.

^aaOR: adjusted for adolescent's age, gender, race/ethnicity, language spoken at home, physical health status, insurance type, geographic region, parent's highest level of education, parent's employment status, parent's marital status, parent's insurance type, parent's usual source of care, family income level, family size, and MEPS survey year.

^bSignificant at $p < .05$.

Table 3

Adolescents with probable mental health need (N = 3,794): prevalence (percentages and standard errors) of receiving PCMH care by adolescent and family characteristics

Had a PCMH			
	%	SE	p
Total sample	42.2	1.2	–
Adolescent characteristics			
Age (mean)	14.6	.06	
Gender (%)			
Female	43.9	1.8	n.s.
Male	40.6	1.5	
Race/ethnicity (%)			
Non-Hispanic white	44.7	1.6	<.05
Non-Hispanic black	38.9	2.3	
Non-Hispanic other	41.4	4.0	
Hispanic	34.8	2.5	
Language spoken at home (%)			
English	42.8	1.3	<.05
Other	33.0	3.7	
Physical health status (%)			
Excellent/very good	45.2	1.4	<.05
Good	37.6	2.1	
Fair/poor	35.4	3.5	
Mental health status (%)			
Excellent/very good	46.5	1.6	<.01
Good	41.7	1.9	
Fair/poor	34.6	2.4	
Has a special health-care need (%)			
Yes	42.4	1.5	n.s.
No	41.7	1.9	
Child health insurance Status (%)			
Private	45.7	1.6	<.0001
Public	38.0	1.8	
Uninsured	28.7	4.2	
Geographic region (%)			
Northeast	51.4	2.9	<.0001
Midwest	46.2	2.4	
South	39.7	2.0	
West	33.5	2.5	
Family characteristics			
Parent education level (%)			
Less than high school	36.5	2.1	<.01

Had a PCMH			
	%	SE	<i>p</i>
High school/GED	41.7	2.3	
Some college	42.8	2.3	
4 years college	49.2	2.5	
Parent employment status (%)			
Employed	44.4	1.5	<.01
Unemployed	36.6	2.0	
Parent marital status (%)			
Not married	45.0	1.6	<.01
Married	37.8	1.7	
Family income (%)			
Poor (<100%)	33.5	2.1	<.001
Near poor (100%–124%)	42.4	3.7	
Low (125%–199%)	43.5	2.6	
Middle (200%–399%)	41.0	2.1	
High (400%)	49.1	2.3	
Parent usual source of care (%)			
Yes	44.6	1.3	<.0001
No	29.9	2.7	
Parent insurance status (%)			
Private	44.7	1.5	<.01
Public	37.3	2.2	
Uninsured	36.7	2.6	

PCMH, patient-centered medical home.

Table 4

Adolescents with probable mental health need (N = 3,794): odds ratios (95% CI) of receiving PCMH care and each PCMH care component by adolescent and family characteristics

	% or Mean	PCMH (N = 3,793)	Usual source of care (N = 3,794)	Accessible care (N = 3,708)	Family-centered care (N = 3,302)	Comprehensive care (N = 3,350)	Compassionate care (N = 3,794)
Adolescent characteristics							
Age (continuous)	14.6	.99 (.94–1.05)	.86 (.77–.95)**	1.01 (.97–1.07)	1.01 (.94–1.08)	.95 (.89–1.02)	.95 (.86–1.05)
Gender							
Female	46.7	1.19 (.99–1.43)	.98 (.68–1.41)	1.10 (.92–1.32)	1.12 (.91–1.38)	1.03 (.81–1.31)	1.04 (.73–1.49)
Male	53.3	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Race/ethnicity							
Non-Hispanic white	64.5	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Non-Hispanic black	13.5	.90 (.69–1.16)	.95 (.57–1.60)	1.02 (.80–1.30)	.81 (.60–1.11)	.93 (.65–1.33)	1.19 (.74–1.93)
Non-Hispanic other	6.1	1.02 (.69–1.50)	.87 (.44–1.75)	.95 (.65–1.38)	.86 (.56–1.32)	.97 (.60–1.58)	1.77 (.81–3.83)
Hispanic	15.9	.87 (.64–1.18)	.71 (.45–1.13)	.81 (.60–1.10)	1.09 (.73–1.61)	.83 (.59–1.18)	1.39 (.86–2.25)
Language spoken at home							
English	93.7	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Other	6.3	.98 (.65–1.49)	.96 (.55–1.65)	1.05 (.73–1.51)	.93 (.59–1.46)	1.11 (.73–1.69)	1.05 (.55–2.02)
Physical health status							
Excellent/very good	62.5	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Good	27.7	.89 (.71–1.11)	1.2 (.78–1.85)	.95 (.76–1.19)	.82 (.61–1.09)	.80 (.60–1.06)	.55 (.36–.82)**
Fair/Poor	9.8	1.00 (.70–1.42)	2.13 (1.05–4.31)*	.99 (.70–1.39)	.95 (.63–1.44)	.73 (.50–1.06)	.53 (.3–.94)*
Has a special health care need (%)							
No	33.4	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Yes	66.6	1.03 (.85–1.25)	1.66 (1.15–2.39)**	1.05 (.87–1.26)	1.46 (1.14–1.88)**	.72 (.56–.94)*	1.37 (.95–1.97)
Child health insurance status							
Private	60.2	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Public	34.5	.96 (.71–1.3)	2.42 (1.37–4.27)**	.96 (.72–1.27)	.94 (.59–1.49)	1.06 (.67–1.68)	.82 (.47–1.43)
Uninsured	5.3	.52 (.30–.90)*	.73 (.32–1.65)	.64 (.41–.99)	.75 (.42–1.33)	.90 (.49–1.64)	.51 (.23–1.15)
Geographic region							

	% or Mean	PCMH (N = 3,793)	Usual source of care (N = 3,794)	Accessible care (N = 3,708)	Family-centered care (N = 3,302)	Comprehensive care (N = 3,350)	Compassionate care (N = 3,794)
Northeast	19.1	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Midwest	25.7	.79 (.59–1.07)	.62 (.26–1.47)	.70 (.52–.95)	1.02 (.71–1.47)	.97 (.64–1.49)	.75 (.42–1.35)
South	32.4	.67 (.51–.90)**	.30 (.13–.68)**	.49 (.38–.64)***	1.04 (.72–1.5)	.99 (.64–1.52)	1.11 (.62–2.01)
West	22.9	.51 (.37–.70)***	.34 (.15–.80)*	.37 (.27–.50)***	.85 (.56–1.27)	.85 (.55–1.29)	.81 (.41–1.6)
Family characteristics							
Parent education level							
Less than high school	29.2	.69 (.51–.92)*	.62 (.33–1.19)	.64 (.48–.87)**	.9 (.61–1.33)	.99 (.68–1.44)	.64 (.31–1.32)
High School/GED	23.3	.90 (.68–1.19)	.78 (.42–1.46)	.91 (.69–1.19)	.9 (.60–1.34)	1.19 (.81–1.74)	.75 (.36–1.56)
Some college	24.8	.88 (.67–1.15)	.68 (.39–1.20)	.84 (.65–1.10)	.91 (.60–1.37)	1.16 (.79–1.69)	.72 (.36–1.46)
4 years college	22.8	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Parent employment status							
Employed	70.8	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Unemployed	29.2	.81 (.64–1.02)	1.21 (.80–1.81)	.83 (.65–1.05)	.80 (.61–1.05)	.95 (.73–1.24)	.74 (.49–1.13)
Family income							
Poor (<100%)	19.2	.72 (.49–1.04)	.91 (.37–2.27)	.64 (.45–.91)	1.13 (.67–1.89)	.82 (.52–1.31)	.50 (.23–1.06)
Near poor (100%–124%)	5.1	1.01 (.66–1.56)	1.24 (.46–3.37)	.98 (.65–1.49)	1.49 (.89–2.50)	.78 (.43–1.41)	1.17 (.53–2.58)
Low (125%–199%)	15.1	1.02 (.74–1.40)	.9 (.42–1.91)	.87 (.64–1.19)	1.44 (.91–2.27)	.83 (.53–1.31)	.67 (.35–1.28)
Middle (200%–399%)	34.1	.78 (.60–1.02)	.67 (.35–1.26)	.73 (.56–.94)	1.37 (.96–1.94)	.72 (.49–1.06)	.85 (.43–1.64)
High (400%)	26.5	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Parent health insurance status							
Private	66.9	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Public	19.1	1.04 (.73–1.47)	.37 (.18–.73)**	.93 (.66–1.31)	.95 (.62–1.46)	.68 (.44–1.07)	1.32 (.75–2.36)
Uninsured	13.9	1.27 (.88–1.84)	1.14 (.59–2.22)	1.36 (.96–1.93)	.83 (.55–1.26)	.71 (.46–1.08)	.91 (.50–1.65)
Parent marital status							
Married	60.3	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Not married	39.7	.94 (.73–1.20)	1.00 (.66–1.53)	1.00 (.78–1.27)	.95 (.72–1.25)	.95 (.73–1.24)	.99 (.65–1.51)
Family size (continuous)	4.2	1.06 (.99–1.15)	1.23 (1.08–1.41)**	1.11 (1.04–1.19)**	.98 (.90–1.06)	.98 (.90–1.08)	1.03 (.9–1.17)
Parent usual source of care							
Yes	83.5	1.69 (1.29–2.21)**	19.40 (13.61–27.66)***	1.71 (1.34–2.19)***	1.32 (.95–1.83)	1.08 (.78–1.49)	1.35 (.89–2.06)
No	16.5	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)

CI, confidence interval; PCMH, patient-centered medical home.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

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