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Authors

Adams, Sally H
Park, M Jane
Brindis, Claire D
[et al.](#)

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Adolescents' Receipt of Care in a Medical Home: Results From a National Survey

Sally H. Adams, Ph.D.^{a,*}, M. Jane Park, M.P.H.^a, Claire D. Brindis, Dr.P.H.^{a,b}, and Charles E. Irwin Jr., M.D.^a^a Division of Adolescent and Young Adult Medicine, Department of Pediatrics, UCSF Benioff Children's Hospital, University of California San Francisco, San Francisco, California^b Philip R. Lee Institute for Health Policy Studies, University of California San Francisco, San Francisco, California

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ABSTRACT

Purpose: Despite long-term emphasis on the medical home for children, little research focuses on adolescents. This study examines adolescent past-year attainment of medical home, its components, and subgroup differences among demographic and mental/physical health condition categories.

Methods: Utilizing the 2020–21 National Survey of Children's Health (NSCH), ages 10–17 (N = 42,930), we determined medical home attainment and its 5 components and subgroup differences utilizing multivariable logistic regression: sex; race/ethnicity; income; caregiver education; insurance; language spoken at home; region; and health conditions: physical, mental, both, or none.

Results: Forty-five percent had a medical home with lower rates among those who were as follows: not White non-Hispanic; lower income; uninsured; in non-English-speaking households; adolescents whose caregivers lacked a college degree; and adolescents with mental health conditions (p range = .01–<.0001). Differences for medical home components were similar.

Discussion: Given low medical home rates, ongoing differences and high mental illness rates, efforts are needed to improve adolescent medical home access.

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IMPLICATIONS AND CONTRIBUTION

Using the most recent nationally representative data, this study found that 45% of adolescents had a medical home. Findings also indicate demographic disparities and low medical home rates for adolescents with mental health problems. These recent findings show need to improve systems of care.

The American Academy of Pediatrics (AAP) defines the medical home as care that is accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective [1,2] and recommends the medical home as a standard of care for the entire pediatric population. The patient-centered medical home (PCMH), an expansion of the medical home, is endorsed by primary care professional organizations and supported by the 2010 Affordable Care Act (ACA) [3,4]. Lower medical home rates are associated with fewer dental visits, more hospital ER visits, higher unmet medical and dental needs among

all children and, among children without special health care needs, decreased preventive visits [5].

Little research focuses on medical home/PCMH among adolescents, who represent nearly half the pediatric population and face different health issues than younger children—issues that may require complex, developmentally appropriate health care, in areas including mental/behavioral health, sexual health, and transition to adult care [6]. Studies using the National Survey of Children's Health (NSCH) reported lower medical home rates for all adolescents compared to younger children [7] and among children without special health care needs, lower rates for adolescents [8].

Two studies have comprehensively examined medical home/PCMH status among adolescents. A study from the 2007 NSCH found a rate of 54% (ages 10–17) [9]. The second study found a rate of 50% (ages 12–17), using data from the 2004–2013

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* Address correspondence to: Sally H. Adams, Ph.D., UCSF Department of Pediatrics, Division of Adolescent and Young Adult Medicine, 550 16th Street, Cubicle 4159, San Francisco, CA 94143.

E-mail address: Sally.Adams@ucsf.edu (S.H. Adams).

Medical Expenditure Panel Survey [10]. Both studies identified socioeconomic disparities and low medical home/PCMH rates among adolescents with a mental health condition.

Given limited focus on medical homes for adolescents, their unique health care needs and their prevalence of mental/behavioral health problems [11–15], this study aims to provide an update on the receipt of medical home among adolescents, with a broad goal of identifying differences among adolescent subpopulations. The study aims are to: 1) provide the most recent national estimates from the NSCH of the proportion of adolescents who receive their care in medical homes; and 2) examine differences among adolescents within demographic and health condition categories. Based on findings reported above, we hypothesize that adolescents with mental health conditions will have lower medical home rates than those without mental health conditions.

Methods

Sample

The analytic study sample consisted of adolescents ages 10–17 ($n = 42,930$), from the 2020–2021 NSCH, an annual survey of children's health (ages 0–17-years), health care access, and family, neighborhood, school, and social contexts completed by parents/caregivers. Parent/caregiver respondents participated via online or paper data collection [16], which took place from June through December in 2020 and in 2021 [17,18]. There were no procedural differences between 2020 and 2021 and response rates were 42.4% in 2020 and 40.3% in 2021 [16]. This analysis is not intended as a comparison to studies analyzing data from NSCH data sets earlier than 2016, due to design and methodology changes starting in 2016 [16]. The study was approved by the Internal Review Board of the University of California, San Francisco, with exempt status.

Study measures

Study outcomes were rates of and demographic and health condition category subgroup differences in: medical home status; and receipt of each of the five components necessary for medical home attainment: usual source of care; personal doctor or nurse; and received: needed referrals, needed care coordination, and family-centered care. The components included in the public use data sets were developed by the Child and Adolescent Health Measurement Initiative, with support from the Health Resources and Services Administration's Maternal and Child Health Bureau to embody the Medical Home concept for children. Independent variables were selected based on categories used in previous analyses of NSCH [5,7–9], as follows: sex; race/ethnicity; household income categories based on percent federal poverty level (FPL); parent/caregiver education; health insurance; language at home; region; and health conditions. Health conditions were coded from responses to questions of whether a parent/caregiver had been told by health care provider and/or education professional that their child had certain health conditions and whether the child currently had the condition (see Appendix A for the lists of physical and mental health conditions). These were categorized as currently had: 1) a physical health condition; 2) a mental health condition; 3) both physical and mental health conditions, and 4) no health condition.

Analyses

Rates of medical home and its 5 components were developed for the full sample and for each of the subgroups within the 8 demographic and health condition categories. We further conducted adjusted multivariable logistic regressions to determine differences in medical home and its components among the subgroups within each of the 8 categories, adjusting for the remaining 7 categories. All analyses adjusted for personal weights and complex survey design factors, using SAS 9.4.

Results

Table 1 presents descriptives of the study population.

Medical home status

Forty-five percent of adolescents had a medical home (Table 2). Within the 8 demographic/health conditions categories, the subgroups with the highest medical home rates had significantly higher rates than their counterparts: males (46%); NH White (54%); highest income level (59%); parent/caregiver with at least a college degree (56%); full-year insured (48%); or spoke

Table 1
Demographic profile of adolescents, ages 10–17, NSCH 2020–2021

Adolescent sample	Weighted % (unweighted N)
Total sample: N = 42,930	
Representing 33,646,604 10-17 year-olds in US	
Sex	
Male	51.1 (22,291)
Female	48.9 (20,639)
Race/ethnicity	
NH-White	49.1 (28,263)
NH-Black	13.8 (3,079)
Hispanic	27.0 (5,915)
NH-Asian	4.5 (2,418)
NH-Other, more than 1 race	5.6 (3,255)
Income	
=>400% FPL	30.3 (17,317)
200%–399% FPL	29.1 (12,988)
100%–199% FPL	21.8 (7,133)
0%–99% FPL	18.8 (5,492)
Respondent Education	
College degree or higher	47.5 (25,338)
Some college or tech school	20.9 (10,071)
High school diploma or GED	20.4 (6,138)
Less than high school diploma	11.3 (1,383)
Health insurance	
Full-year insured	90.7 (39,853)
Partial-year insured	2.3 (918)
Full-year uninsured	7.0 (1,838)
Language at home	
English	84.1 (39,533)
Other than English	15.9 (3,181)
Region	
Northeast	15.6 (6,782)
Midwest	20.8 (10,347)
South	39.5 (12,931)
West	24.0 (12,870)
Health conditions	
Physical health conditions only	20.6 (8,742)
Mental health condition only	14.6 (6,483)
Both physical and mental health conditions	13.9 (6,677)
No conditions	51.0 (19,281)

FPL = federal poverty level; NH = Non-Hispanic.

Table 2
Past-year rates (%) of medical home and its five components by demographic and health condition categories; adolescents ages 10–17: 2020–2021 NSCH

	Had a medical home		Had a usual source of care		Had a personal doctor/nurse		Received referrals when needed		Received care coordination when needed		Received family-centered care	
	%	aOR	%	aOR	%	aOR	%	aOR	%	aOR	%	aOR
		p-level		p-level		p-level		p-level		p-level		p-level
Total sample	45.0		73.7		69.2		96.5		85.3		89.1	
Ages 10–17 years (N = 42,930)												
Sex												
Male ^a	46.3		75.0		69.6		96.7		86.5		88.9	
Female	43.6	0.0074	72.4	NS	68.8	NS	96.4	NS	83.9	0.0001	89.3	NS
Race/ethnicity												
NH-White ^a	54.2		83.7		76.9		96.6		85.0		91.8	
NH-Black	37.0	<0.0001	62.4	<0.0001	63.3	<0.0001	96.1	NS	87.1	NS	86.5	0.0011
Hispanic	33.7	<0.0001	62.7	<0.0001	58.8	0.0002	96.6	NS	85.0	NS	85.5	0.003
NH-Asian	33.8	<0.0001	59.9	<0.0001	63.2	<0.0001	97.3	NS	85.7	NS	88.1	NS
Other	47.5	NS	77.9	0.0102	70.8	NS	95.7	NS	84.0	NS	89.3	NS
Income:												
=>400% FPL ^a	58.7		86.3		81.5		97.2		84.8		92.8	
200%–399% FPL	48.0	<0.0001	77.9	<0.0001	71.5	<0.0001	96.9	NS	85.7	NS	89.5	0.0002
100%–199% FPL	37.0	<0.0001	67.1	<0.0001	63.1	<0.0001	96.2	0.0052	84.4	0.0089	87.2	<0.0001
0%–99% FPL	27.4	<0.0001	54.4	<0.0001	52.5	<0.0001	95.3	<0.0001	86.3	NS	84.6	<0.0001
Respondent Education												
College degree or higher ^a	55.5		84.5		79.0		96.7		83.7		91.2	
Some college or tech school	44.6	0.003	74.1	<0.0001	69.0	0.0002	95.8	NS	85.8	0.0040	90.1	NS
High school diploma or GED	32.7	<0.0001	60.9	<0.0001	58.8	<0.0001	96.3	NS	86.7	<0.0001	86.6	NS
Less than high school diploma	23.4	<0.0001	50.2	<0.0001	46.5	<0.0001	97.3	NS	88.3	0.0027	82.9	NS
Health insurance												
Full-year insured ^a	47.6		76.6		72.2		96.6		85.3		89.3	
Partial-year insured	29.7	<0.0001	72.6	NS	59.7	0.049	92.5	0.0008	70.4	0.0001	79.4	0.0008
Full-year uninsured	19.2	<0.0001	40.7	<0.0001	35.7	<0.0001	96.2	NS	88.9	NS	89.1	NS
Language at home												
English ^a	48.5		77.4		72.5		96.5		85.4		90.2	
Other than English	26.8	0.0026	54.9	NS	51.9	NS	96.5	NS	84.7	0.0262	83.1	0.0089
Region												
Northeast ^a	47.1		74.8		75.8		97.5		84.1		88.4	
Midwest	49.1	NS	78.6	0.015	71.8	0.0004	97.3	NS	86.2	NS	91.7	0.0032
South	43.8	NS	72.2	NS	66.9	<0.0001	96.1	0.0116	86.4	0.0333	88.4	NS
West	42.0	NS	71.2	NS	66.5	<0.0001	95.9	0.0034	83.3	NS	88.5	NS
Health conditions												
Physical health conditions only ^a	50.8		79.8		74.0		96.6		84.9		89.7	
Mental health condition only	42.1	<0.0001	76.9	NS	71.8	NS	94.4	0.013	79.5	<0.0001	86.8	NS
Both physical and mental health conditions	40.9	<0.0001	79.7	NS	76.6	NS	89.8	<0.0001	68.7	<0.0001	84.1	<0.0001
No conditions	46.0	NS	70.8	<0.0001	65.5	0.0002	98.8	<0.0001	91.1	<0.0001	90.9	0.0166

aOR = adjusted odds ratio; FPL = federal poverty level; NH = Non-Hispanic; NS = non-significant.

^a Referent group; for each category, aORs are adjusted for the remaining seven demographic/health conditions category variables.

English at home (49%) (p range = .007 to <.0001) (See [Appendix B](#) for the table of the odds ratios and confidence intervals). No significant differences were found by geographic region. Those with only physical health conditions had significantly higher medical home rates (51%) compared to those with: only mental health conditions (42%); and both physical and mental health conditions (41%) (both p < .0001).

Five medical home components

Rates of attaining the individual components for the full sample ranged from 69% (personal doctor/nurse) to 97% (received needed referrals). ([Table 2](#)).

The analysis identified significant subgroup differences in attainment of components within each demographic/health condition category. Compared to males, females had lower attainment of receipt of effective care coordination, p = .0001. Compared to NH–White adolescents, all other racial/ethnic groups had lower rates of usual source of care (p range = .0102–<.0001); all groups except NH–Other had lower rates of having personal doctor/nurse (p range .0002–<.0001); and the NH–Black and Hispanic groups had lower rates of receipt of family-centered care (p range = .003–.0011). Compared to the highest income group, adolescents from lower income levels had lower attainment of all five components (p range = .0089–<.0001), with two exceptions: differences for the 200%–399% FPL subgroup were not significant for received referrals and received effective care coordination. Differences by parent/caregiver education, compared to the college degree group, included lower rates of usual source of care and personal doctor/nurse for all subgroups (p range = .0002–<.0001), and higher rates of care coordination (p range = .004–<.0001). Those lacking full-year insurance had lower attainment of all components (p range = .049–<.0001), with four exceptions: the partial-year insured for usual source of care; and the full-year uninsured for receiving referrals, care coordination, and family-centered care. Compared to those who spoke English at home, adolescents who spoke a different language had lower attainment of effective care coordination (p = .026) and family-centered care (p = .0089). Compared to adolescents in the Northeast, adolescents in all other regions had lower rates of personal doctor/nurse (p range = .004–<.0001); adolescents in the Midwest had higher rates of usual source of care and receiving family centered care (p range = .015–.0032); adolescents in the South and West had lower rates of receiving referrals (p range = .0116–.0034); and adolescents in the South had higher rates of receiving effective care coordination (p = .0333).

Within health conditions groups, comparing to the physical health condition group, the mental health condition only group had lower rates of received referrals and care coordination (p range = .013–<.0001); and the mental and physical health conditions group had lower rates of received referrals, care coordination, and family centered care (p < .0001). The no-conditions group had lower usual source of care and personal doctor or nurse rates (p range = .0002–<.0001) and higher receipt of referrals, care coordination, and family centered care rates (p range = .0166–<.0001).

Discussion

Two decades after the AAP recommended that all children and youth receive care in a medical home, this study found that only 45% of adolescents attained this standard of care, less than

in earlier studies [9,10]. Although differing measurement of medical home/PCMH across studies precludes direct comparisons, this finding does not suggest improvement over the past decade. Consistent with prior research [9,10], this study identified large differences: medical home rates were below 30% for adolescents in the lowest income and parent/caregiver education levels, those not speaking English at home, and those lacking full-year insurance. Medical home rates remain lower for adolescents with mental health conditions, including those with both physical and mental health conditions. Rates of attaining the 5 components were lowest for having a personal doctor/nurse and usual source of care, overall and across the demographic/health conditions categories, with few exceptions. Compared to other components, rates of receipt of referrals and effective care coordination were lower among those with mental health conditions, including those with both physical and mental health conditions. Lower rates of care coordination and referrals received by those with mental health conditions may be related to significant increases in mental health conditions in adolescents over the past decade [19] and the lack of access to mental health services due to critical mental health workforce shortages nationally [20].

These data have limitations. The 5 components used in NSCH to assess medical home status approximate the AAP definition but are not exact. These findings may be limited by use of parent/caregiver views which may differ from adolescent views and may not reflect all care received by adolescents. NSCH nonrespondent bias analysis revealed no consistent bias following completion of sample weighting procedures [21,22].

The study documents ongoing differences and lack of access to a medical home, including lower rates for adolescents with mental health conditions. Future analyses and initiatives to advance medical homes for adolescents will need to address these differences and improve systems of care for those with mental health conditions.

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Supplementary Data

Supplementary data related to this article can be found at [10.1016/j.jadohealth.2023.05.019](https://doi.org/10.1016/j.jadohealth.2023.05.019).

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