Published in final edited form as:

Acad Pediatr. 2017 ; 17(1): 17–26. doi:10.1016/j.acap.2016.06.008.

Disparities in Patient- and Family-Centered Care During U.S. Children's Healthcare Encounters: A Closer Examination

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Abstract

Objective: Patient- and family-centered care (PFCC), which recognizes the family as an integral partner in high-quality clinical decision-making, is important to improving children's healthcare. Studies examining PFCC disparities in the general U.S. pediatric population, however, are sparse, and utilize methodology that may mislead readers to overestimate effect sizes given the high prevalence of high-quality PFCC. We address these issues using improved statistical modeling of conceptually-grounded disparity domains on more recent data.

Methods: This study examines 22,942 children in the 2011-2013 Medical Expenditure Panel Survey (pooled cross-section) with at least one healthcare visit in the previous year (eligible for PFCC questions). We utilize robust-adjusted multivariable Poisson regression to estimate prevalence rate ratios – closer estimates of true risk ratios of highly-prevalent outcomes – of 4 measures of high-quality PFCC and a composite measure.

Results: Overall, PFCC quality prevalences were high, ranging from 95-97% across the four PFCC measures with 92% of parents reporting the composite measure. In multivariable analyses, lower prevalence of high-quality PFCC was consistently observed among publicly-insured children (relative to the privately insured, prevalence rate ratios ranging from 0.978-0.984 across the PFCC measures; 0.962 in the composite) and children living in families below the poverty line

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¹Author successfully defended his doctoral dissertation on June 3, 2016; all signatures on record at the Graduate School; the PhD degree will be officially conferred Aug. 13, 2016

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(children at 400+% of the poverty line had 1.018-1.045 times the prevalence of high-quality PFCC across the PFCC measures; 1.056 in the composite).

Conclusions: Though prevalence rate ratio methodology reveals smaller and perhaps clinically insignificant disparities in U.S. children's PFCC quality than previously portrayed, nonetheless several statistically significant disparities remain. The most consistent disparities identify those most vulnerable to PFCC quality: publicly-insured and impoverished children.

Keywords

healthcare disparities; patient-centered care; physician-patient relations; health care quality, access, and evaluation; children

Health disparities in children are particularly concerning given that early childhood health and development is widely recognized as a "critical period" which has lasting, lifelong effects on health.¹ An important approach to reducing disparities in and improving quality of children's health care is patient- and family-centered care (PFCC).² In sum, PFCC includes the family as the child's primary source of strength and support and recognizes the family as an integral partner with a child's health care team which provides perspectives and information essential to high-quality clinical decision-making.³ In children, high-quality PFCC is associated with improved health outcomes, improved experiences and satisfaction with care, decreased cost of care, and effective use of healthcare resources.³ The literature on disparities in children's PFCC measures, however, has focused mostly on specific pediatric subpopulations (e.g., children with special health care needs,^{4,5} or children with autism,⁶ among others). By comparison, PFCC disparities literature on the general pediatric population is sparse and with unclear findings.⁷ For example, of the limited such studies to our knowledge, some show high-quality PFCC to be more prevalent among Whites relative to minorities,⁸ whereas others found Hispanic children to have significantly higher prevalence relative to Whites, with no Black-White difference.⁷ Similarly, some studies found privately insured children had significantly higher high-quality PFCC relative to the publicly-insured,^{7,9} while others found no difference.⁸ Further, these studies utilize logistic regression. While odds ratios (ORs) are not themselves incorrect, in the presence of highly-prevalent outcomes ORs move farther away from approximating true risk ratios. This scenario is problematic given that many readers may tend to misinterpret ORs as risk ratios.

The objective of this study is to gain a better understanding of disparities in the receipt of PFCC among the general population of U.S. children. It contributes to and improves upon the literature in two ways: (1) by using a conceptual model of determinants of health services utilization to theoretically ground the selection of disparity domains in newer data; and (2) by utilizing a methodology that more closely approximates true risk ratios in order to reduce misinterpreting odds ratios as risk ratios when studying outcomes with high prevalence.

Methods

We performed a pooled cross-sectional analysis of three years of survey data from a nationally-representative sample of US children to examine disparities in PFCC.

Data source.

This study used 2011-2013 Medical Expenditure Panel Survey (MEPS) pooled data. Sponsored by the Agency for Healthcare Research and Quality, MEPS is a nationally representative survey of U.S. non-institutionalized individuals that oversamples Blacks and Hispanics. It collects data on healthcare utilization and spending, health insurance coverage, medical costs, health status, access to care, and socio-demographic characteristics. The 2011-2013 surveys contain pooled data on 111,227 persons, and the un-weighted response rates varied between 52.8% and 56.3% and across the years.¹⁰⁻¹² Excluding adults, there are 30,902 children aged 0-17 year-olds with an assigned person-level weight. Of these children, the present study examined the 22,942 children with at least one healthcare visit in the previous 12 months (eligible for PFCC questions).

Another publicly-available dataset nationally-representative of the general pediatric population that can be used to study PFCC outcomes is the National Survey of Children's Health (NSCH). Both datasets have strengths and weaknesses but they both capture many similar valid and reliable items and dimensions of the medical home, including PFCC.^{13,14} We decided to use MEPS because the PFCC measures they have are more widely used and frequently administered, and allow annual comparison over time¹³ (including to a pooled MEPS PFCC analysis from last decade⁷). Further, pooling MEPS years provided us with a large enough sample of children to sufficiently study PFCC disparities with more recent data than available from the NSCH.

Dependent variables.

Four measures represent PFCC – if parents “usually or always” felt that the child’s doctor or provider: (1) showed respect for what the parent said; (2) listened carefully; (3) explained things in a way that was easy to understand; and (4) spent enough time with the child. These four core items were designed to be grouped into a composite measure that demonstrated reliability and validity via psychometric analyses.¹⁴ Thus, a fifth variable is a composite of the first four representing a more comprehensive, catch-all measure of high-quality PFCC – the joint occurrence of a parent reporting “usually or always” feeling all four dimensions of perceived quality simultaneously. All five measures are dichotomous (1=“usually/always”, 0=“sometimes/never”), consistent with prior research on PFCC.^{4,7-9}

Independent variables.

To sufficiently model these outcomes and theoretically-ground our selection of disparity domains, this study employed the most recent iteration of Andersen’s behavioral model for health services use.¹⁵ This model provides a multilevel conceptualization of the determinants of health services utilization (factors that predispose, enable and create need for health services use). It has been used extensively in studies investigating health services use across several realms of the healthcare system.¹⁶ PFCC fits under this model as a process of care construct capturing the experiences individuals have during healthcare encounters.

From this model, we selected 14 variables representing 10 disparity domain constructs. *Insurance status* was measured as three mutually exclusive categories: private, public, and

uninsured. Private insurance was defined as having, at any point in the year, private insurance covering hospital and physician care (including TRICARE/CHAMPVA). Public insurance was defined as those only covered, for the entire year, by CHIP, Medicaid, Medicare, or other public hospital. Children not insured by these sources at any time during the entire year or those covered only by single-service plans (e.g., dental, vision, drug plans) were considered uninsured. This categorization is constructed by MEPS analysts and is used in other nationally-representative studies examining PFCC disparities in the general pediatric population in the MEPS dataset.⁷ Additional categorical disparity domains included: *race/ethnicity* (Hispanic; non-Hispanic White; non-Hispanic Black; non-Hispanic Asian; or non-Hispanic other/multiple race); *sex* (male/female); *Census region* (Northeast; Midwest; South; or West); *nativity* (U.S.-/foreign-born); *family income as percentage of the Federal Poverty Line* (FPL: <100%; 100-124%; 125-199%; 200-399%; or 400+); and whether or not the child has *special healthcare needs* (yes/no; see the MEPS codebooks¹⁰⁻¹² for discussion of the published instrument used to construct this variable). Ordinal or continuous disparity domains included: *age* (years); five measures of *perceived health status* (Likert-like scale, 1-5, where 1='definitely true' and 5='definitely false' regarding parental perception that their child: will have a healthy life; is less healthy than others; has never been seriously ill; gets sick easily; and that the parent worries about their child's health), and one measure of *frequency of health service utilization* (number of clinic visits, previous 12 months).

Analysis.

All analyses were conducted using Stata/MP 14.1 statistical software.¹⁷ We used Stata's *svyset* and *svy* commands as to calculate standard errors accounting for complex survey design (stratification, clustering, multiple stages of selection, disproportionate sampling) using pooled cross-section weights. First, bivariate associations between each independent variable and each PFCC outcome were examined. Due to highly prevalent outcomes, we assessed fully-adjusted associations using multivariable Poisson regression models of PFCC outcomes onto all disparity domains. Prior PFCC literature has utilized logistic regression of the same binary PFCC outcomes, though odds ratios diverge from true risk ratios when used to examine non-rare outcomes,¹⁸ the effect of which can be dramatic when the outcomes are as very highly prevalent as high-quality PFCC. Poisson regression of a binary outcome, using robust sandwich estimators, can directly estimate risk ratios very close to the true risk ratios regardless of outcome prevalence and has been used in published studies examining health and health services.¹⁹⁻²¹ Thus, this study examined disparities in PFCC using five multivariable, robust-adjusted Poisson regression models.

This research has been reviewed by the Pennsylvania State University's Institutional Review Board where it was deemed to not meet the definition of human participant research as defined by the federal regulations.

Results

Summary statistics of the variables in this study are shown in Table 1. In bivariate analyses (Table 2), it should first be noted that the prevalence of parents reporting high-quality PFCC

for their children during healthcare encounters was high across all measures and among all determinants. For example, examining all bivariate cells in Table 2, the unadjusted prevalence of high-quality PFCC outcomes ranged from 91-99% among the four individual measures and 86-95% in the composite measure. Significant disparities were small (often a few percentage point difference) but lower prevalence of high-quality PFCC was consistently seen across most or all PFCC outcomes in the publicly-insured, racial/ethnic minorities, the poor, and those with special healthcare needs, worse parent-perceived health status, and more annual visits, unadjusted for covariates.

Table 3A shows multivariable, nationally-representative Poisson regression models of each PFCC indicator regressed onto all covariates. In only four disparity domains were there significant differences in prevalence rate ratios (PRR) across all four PFCC outcomes and the composite measure. Relative to the privately-insured, publicly-insured children had less high-quality PFCC (adjusted PRR of 0.962 in the composite measure, ranging from 0.978-0.984 across the 4 individual outcomes). Significant disparities across all 4 outcomes were also seen for the poor (the wealthiest children had 1.056 times higher prevalence of high-quality PFCC in the composite [the highest magnitude PRR in the multivariate model], ranging from 1.018-1.045 across individual measures), children in the West relative to the Northeast (composite adjusted PRR of 0.968, ranging from 0.979-0.986 across the 4 individual outcomes), and parents who worried more about their child's health (1.003-1.005 higher prevalence associated with each Likert-scale increase toward not worrying about their child's health; 1.007 in the composite). Broadly, the individual outcome measures with significant PRRs of the largest magnitude were those related to providers showing respect for what the parent has said (largest disparities by insurance type and Census region), and related to provider time spent with the child (largest disparities by family income). Counterintuitively, there were very few significant racial/ethnic disparities (none in the composite measure), and there appeared to be no consistent pattern within any race/ethnicity looking across all measures. Table 3B shows parallel analyses using multivariable logistic regression. A comparison of Tables 3A and 3B illustrates how ORs and PRRs can be quite divergent in the same sample in the presence of highly-prevalent outcomes.

Discussion

Although there were significant disparities in the prevalence of parental reports of high-quality PFCC outcomes in this study among multiple disparity domains, parents in this study generally reported high prevalence of high-quality PFCC experiences. This finding is consistent with other studies reviewed earlier in this paper and should not be overlooked, as it indicates a success – that most parents in the U.S. usually or always feel their children are receiving high-quality processes of care. A particularly important contribution that this study adds to this literature, though, is the use of statistical methods that are preferable when studying outcomes with such high prevalence. Indeed, comparing the disparities of prevalence rate ratios of high-quality PFCC outcomes among disparity domains in our study reveals a clearer picture in two ways: (1) the disparities as portrayed by PRRs (a closer approximation of true risk ratios) are quite smaller than disparities from the same models as portrayed by ORs and may be clinically insignificant; and (2) the largest and most consistent

disparities identify those most vulnerable to low PFCC quality: publicly-insured children, and children with family income below the poverty line.

In fully adjusted models, parents with children with only public insurance (relative to those with any private insurance) were significantly less likely to report high-quality PFCC across all indicators. This may be explained by the relatively high proportion of children covered by public insurance – a population more likely to be in poorer health²² – coupled with literature showing parents of children in poorer health are less likely to feel respected and listened to by their child's provider.²³ However, this finding was independent of parental perception of their child's health. It might also be explained by literature suggesting a treatment stigma for Medicaid/CHIP patients.²⁴

Parents of children from families with an income below the poverty line reported significantly lower prevalence of high-quality PFCC experiences for every PFCC measure. This effect was seen not just when compared to the highest classes of income – there were significant disparities even relative to children in families defined as “low-income” (125-199% above the poverty line). Such poverty-based disparities may also be explained by aforementioned stigmatization issues, by the likelihood of poorer patients to be uninsured, or by the increased difficulty of assessing multiple chronic conditions (which are more likely to occur for those with lower socioeconomic status).²⁵ Regardless, these disparities remain even after controlling for insurance type and many covariates of health services use and need to be elucidated.

We observed very little racial/ethnic disparities in high-quality, PFCC and those we observed were small in magnitude and conflicting. For example, relative to non-Hispanic Whites, parents of Hispanic children had slightly higher PRRs of high-quality PFCC in the respect measure but slightly lower PRRs in the measure of whether they got enough time with the provider. This is inconsistent with recent analysis of National Survey of Children's Health data, where parents of racial/ethnic minority children were significantly more likely than parents of White children to report worse PFCC outcomes broadly⁸, but consistent with analyses of PFCC outcomes in MEPS children from 2003-2006 that found no significant racial/ethnic differences in non-Hispanic Black children.⁷ Clearly more research is needed.

These findings should be interpreted within this study's limitations. First, variables in this study do not capture changes in or duration of insurance status within the year which may represent an underestimation of the uninsured. Related, our findings do not differentiate between subtypes of private or public insurance, although this is not anticipated to be a significant limitation because very few children ever had Medicare during the year (0.39%) or other public insurance (0.54%), indicating the public insurance variable almost entirely represents children on Medicaid or CHIP. Similarly, only 1.87% of the children ever reported having TRICARE or CHAMPVA insurance at any time during the year, so the private insurance variable is almost entirely non-military. Second, MEPS data do not account for state-level differences in policies pertaining to expansion, eligibility, or degree of public insurance availability.^{26,27} We minimize this by including controls for Census region; though only a crude measure of geographic variation, region of residence in the U.S. is a predictor of child health outcomes, disparities, and insurance.²⁸ Third, MEPS does not

provide data on marital status, education, or occupation of parent respondents, which are implicated as important measures contributing to health,²⁹ though we have captured some of these effects through the family income covariate. Fourth, some disparity domains were only significant in some PFCC outcomes but not others (such as children having special healthcare needs, number of clinic visits, race/ethnicity, and certain measures of perceived health status of the child) and thus require better characterization. This is particularly important for children with special healthcare needs, as PFCC is suggested as a setting for reducing their unmet health service needs through its tenet of care coordination,⁵ and there is a need for programs and policies to better understand implementing PFCC particularly for children with special healthcare needs.³⁰ Last, the NSCH also includes a fifth question in the construction of its PFCC composite measure related to parent perception of partnership with the provider, which explains why estimates of NSCH's composite measures are lower³¹ than those estimated in this study and published elsewhere⁷ using MEPS' composite measures. The Appendix includes the exact wording of each sources' questions. Future research should investigate variation in measurement of PFCC and the role of survey questions in truly capturing PFCC constructs.

This study addresses gaps in child health disparities research. First, although pediatric PFCC disparities have previously been documented and explored, this study adds to the few studies investigating such disparities in the general U.S. pediatric population, and conceptually grounds its selection of a variety of disparity domains. Second, instead of conventional logistic regression, it utilizes statistical modeling that is preferred in the presence of highly-prevalent outcomes in order to minimize the chance that readers assume ORs represent risk ratios (an assumption that is only true when outcome prevalence is uncommon).

On average, children in this study had both high levels of insurance coverage and their parents reported high prevalence of high-quality PFCC experiences, which is an optimistic finding that may represent the relative successes of the U.S. healthcare system in its continuation and expansion of public insurance programs. Future research should follow PFCC experiences over time to determine the long-term effects of these expansions and examine how PFCC may evolve over time with changing healthcare infrastructure and expanding health insurance programs. Though the disparities found via PRRs are quite small and perhaps clinically insignificant, many were significant and any disparities in U.S. children's PFCC outcomes warrant further investigation and policy attention – not only are these disparities unjust, but parental dissatisfaction with a provider may affect future health choices that parents make for their children and the degree of parent adherence to provider instructions, linking PFCC disparities to many other children's health issues.³² In addition to the important role of families, healthcare delivery for children includes multiple systems of care and services.³³ This is similar to individuals diagnosed with cancer, who are faced with coordinating a complex number of services. Patient navigators and lay health workers have been explored more in cancer care coordination,³⁴ as well as among pediatric patients with chronic diseases.³⁵ Policies that integrate social workers³⁶ or patient navigators earlier in the care delivery process, particularly for low-income families with children, may play an important future role in addressing the health disparities identified in our findings. Further, future surveys need to include questions specifically about providers' and patients' respective cultures as well as dyadic cultural competence between the two. Finally, it would

be particularly useful for future research to examine how local, state, and regional differences in social, economic, and health policy contribute to these disparities, especially in places with high numbers of impoverished and uninsured populations and comparatively little investment in children's health and insurance programs.

The United States has made significant investment into expanding access of care to children, and there is strong evidence that these efforts have translated into improved access to and use of services. However, the effects of these programs on health outcomes are mixed,³⁷ and the most vulnerable children remain at risk. Disparities uncovered in this study are of small magnitude but nonetheless the populations identified in this study as most vulnerable – namely, publicly-insured children and children with family income below the poverty line – provide evidence for where policy targeting processes of pediatric care quality might focus.

Acknowledgements

We wish to make several acknowledgements. We thank Kristine Yi for assistance in and review of earlier drafts of this manuscript, and Ernest Afrifa-Anane, Raphael Awuah, Bilikisu Reni Elewonibi, Amy Thierry, and Katsuya Oi for review of earlier drafts of this manuscript. This research uses publicly available data sponsored by the Agency for Healthcare Research and Quality. This research was supported by the Department of Health Policy and Administration at Pennsylvania State University. This publication was also supported, in part, by Grant UL1 TR000127 and KL2 TR000126 from the National Center for Advancing Translational Sciences (NCATS). We also acknowledge assistance provided by the Population Research Institute at Pennsylvania State University, which is supported by an infrastructure grant from the National Institutes of Health (2R24HD041025-11). All of the authors report no potential conflicts of interest.

Appendix

Questions from MEPS and NSCH used to make PFCC composite measure

From MEPS

- CS15: In the last 12 months, how often did {your/{PERSON}}'s} doctors or other health providers listen carefully to you?
- CS16: In the last 12 months, how often did {your/{PERSON}} 's} doctors or other health providers explain things in a way that was easy to understand?
- CS17: In the last 12 months, how often did {your/{PERSON}} 's} doctors or other health providers show respect for what you had to say?
- CS18: In the last 12 months, how often did doctors or other health providers spend enough time with {you/{PERSON}}?

For all questions above, the response options were: never; sometimes; usually; always; refused; don't know.

Source: Agency for Healthcare Research and Quality. *Child Preventive Health Supplement (CS) Section*. Rockville, MD; 2012. http://meps.ahrq.gov/mepsweb/survey_comp/hc_survey/2012/CSn1912.pdf. Accessed February 15, 2016.

From NSCH

- K5Q40: During the past 12 months, how often did [CHILD'S NAME]'s doctors and other health care providers spend enough time with [him/her]?
- K5Q41: During the past 12 months, how often did [CHILD'S NAME]'s doctors and other health care providers listen carefully to you?
- K5Q42: When [CHILD'S NAME] is seen by doctors and other health care providers, how often are they sensitive to your family's values and customs?
- K5Q43: During the past 12 months, how often did you get the specific information you needed from [CHILD'S NAME]'s doctors and other health care providers?
- K5Q44: During the past 12 months, how often did [CHILD'S NAME]'s doctors or other health care providers help you feel like a partner in [his/her] care?

For all questions above, the response options were: never; sometimes; usually; always; refused; don't know.

Source: Health Resources and Services Administration, Maternal and Child Health Bureau, and Centers for Disease Control and Prevention, National Center for Health Statistics. *Guide to Topics & Questions Asked: National Survey of Children Health 2011/12: SECTION 5: Medical Home*. http://www.childhealthdata.org/learn/NSCH/topics_questions/2011-12-nsch#S5. Accessed February 15, 2016.

MEPS = Medical Expenditure Panel Survey

NSCH = National Survey of Children's Health

PFCC = Patient- and Family Centered Care

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What's New:

Disparities exist in U.S. children's patient- and family-centered care, though use of statistical modeling more closely approximating true risk ratios reveals their magnitude to be smaller than previously portrayed. The most vulnerable populations include publicly-insured and impoverished children.

Table 1

Summary statistics of study sample (N=22,942 children, MEPS 2011-2013, weighted)

Variable	n	(%)
Parent felt child's doctor or provider showed respect for what the parent said		
Sometimes or never	788	(3.07)
Usually or always	22,054	(96.93)
Parent felt child's doctor or provider listened carefully		
Sometimes or never	1,025	(3.57)
Usually or always	21,803	(96.43)
Parent felt child's doctor or provider explained things in a way that was easy to understand		
Sometimes or never	865	(2.77)
Usually or always	21,981	(97.23)
Parent felt child's doctor or provider spent enough time with the child		
Sometimes or never	1,495	(5.14)
Usually or always	21,342	(94.86)
Composite measure		
Sometimes or never response to at least one of the above 4 variables	2,246	(7.93)
Usually or always response to all of the above 4 variables	20,544	(92.07)
Insurance		
Any private insurance	9,668	(60.37)
Only public insurance	12,453	(36.46)
Uninsured	821	(3.17)
Race/ethnicity		
Hispanic	8,605	(22.19)
Non-Hispanic White	7,090	(55.29)
Non-Hispanic Black	4,895	(13.29)
Non-Hispanic Asian	1,309	(4.65)
Non-Hispanic other/multiple race	1,043	(4.57)
Sex		
Female	11,210	(48.77)
Male	11,732	(51.23)
Census Region		
Northeast	3,837	(18.06)
Midwest	4,592	(22.29)
South	8,372	(37.01)
West	6,128	(22.64)
Nativity		
US-born	17,963	(97.22)
Foreign-born	740	(2.78)
Family income as a percentage FPL		
<100%	7,846	(20.53)
100-124%	1,704	(5.55)

Variable	n	(%)
125-199%	4,114	(15.70)
200-399%	5,409	(29.53)
400+%	3,869	(28.69)
Child with special healthcare needs		
No	17,596	(75.12)
Yes	5,082	(24.88)
Variable	n:	mean (sd)
Age (years)	22,942:	8.23 (5.25)
Perceived health status (Likert-like scale, 1-5, 1=definitely true ... 5=definitely false)		
Child will have a healthy life	22,941:	1.28 (0.62)
Child less healthy than other children	22,940:	4.60 (0.90)
Child has never been seriously ill	22,942:	1.91 (1.46)
Child gets sick easily	22,942:	3.70 (1.28)
Worried about child's health	22,940:	3.57 (1.56)
Health service utilization		
Clinic visits in the last 12 months	22,942:	2.61 (1.60)

Due to missing values, some cross-tabulations may not add up to total sample size. Weighted to be nationally-representative of children with at least one doctor's office or clinic or healthcare visit in previous 12 months (eligible for outcomes); *n* unweighted to show actual number of respondents in each cell

Table 2

Correlates of each individual PFCC indicator and its determinants (N=22,942 children, MEPS 2011-2013, weighted)

Variable	Usually/always felt provider showed respect	Usually/always felt provider listened carefully	Usually/always felt provider explained things in an easily understandable way	Usually/always felt provider spent enough time with child	Composite measure = 1
Percent yes (n)	Percent yes (n)	Percent yes (n)	Percent yes (n)	Percent yes (n)	Percent yes (n)
Insurance					
Any private insurance	97.95 (9,407)	97.75 (9,352)	98.63 (9,454)	96.51 (9,218)	94.64 (8,983)
Only public insurance	*** 95.18 (11,858)	*** 94.28 (11,682)	*** 94.92 (11,748)	*** 92.18 (11,375)	*** 87.87 (10,836)
Uninsured	97.53 (789)	95.98 (769)	97.00 (779)	94.10 (749)	92.02 (725)
Race/ethnicity					
Hispanic	96.59 (8,276)	95.38 (8,143)	95.81 (8,180)	92.49 (7,885)	89.08 (7,575)
Non-Hispanic White	97.00 (6,827)	97.05 (6,794)	98.01 (6,882)	96.18 (6,745)	93.75 (6,529)
Non-Hispanic Black	96.91 (4,687)	*** 95.28 (4,617)	*** 96.25 (4,658)	*** 93.27 (4,509)	*** 89.57 (4,314)
Non-Hispanic Asian	96.62 (1,260)	95.51 (1,244)	96.70 (1,257)	93.56 (1,218)	91.07 (1,174)
Non-Hispanic other/multiple race	98.08 (1,004)	98.17 (1,005)	98.05 (1,004)	96.28 (985)	94.43 (952)
Sex					
Female	97.21 (10,786)	96.61 (10,658)	97.20 (10,739)	94.95 (10,403)	92.16 (10,013)
Male	96.66 (11,268)	96.26 (11,145)	97.26 (11,242)	94.77 (10,939)	91.98 (10,531)
Census Region					
Northeast	97.83 (3,720)	97.48 (3,675)	97.89 (3,686)	95.48 (3,558)	93.09 (3,432)
Midwest	97.01 (4,412)	* 96.35 (4,363)	** 97.76 (4,415)	*** 96.18 (4,338)	** 93.33 (4,168)
South	96.96 (8,045)	96.51 (7,968)	97.08 (8,015)	94.58 (7,791)	92.09 (7,527)
West	96.06 (5,865)	95.60 (5,787)	96.41 (5,853)	93.50 (5,643)	90.04 (5,407)
Nativity					
US-born	96.87 (17,257)	* 96.41 (17,092)	97.23 (17,222)	94.85 (16,730)	92.08 (16,127)
Foreign-born	96.82 (716)	93.89 (691)	96.66 (712)	94.95 (694)	89.51 (657)
Family income as a percentage FPL					
<100%	94.97 (7,459)	93.86 (7,347)	94.47 (7,389)	91.24 (7,116)	86.77 (6,782)
100-124%	95.87 (1,624)	94.70 (1,597)	95.26 (1,605)	93.08 (1,565)	89.27 (1,487)
125-199%	*** 96.34 (3,955)	*** 95.79 (3,913)	*** 96.34 (3,932)	*** 93.93 (3,823)	*** 90.49 (3,674)

	Usually/always felt provider showed respect	Usually/always felt provider listened carefully	Usually/always felt provider explained things in an easily understandable way	Usually/always felt provider spent enough time with child	Composite measure = 1	
Variable	Percent yes (n)	Percent yes (n)	Percent yes (n)	Percent yes (n)	Percent yes (n)	
200-399%	97.45 (5,230)	96.82 (5,169)	98.07 (5,247)	95.51 (5,102)	93.59 (4,947)	
400+%	96.93 (3,686)	98.54 (3,777)	99.20 (3,808)	97.62 (3,736)	95.70 (3,654)	
Child with special healthcare needs						
No	***97.56 (17,007)	***97.00 (16,820)	***97.61 (16,926)	***95.45 (16,434)	***93.01 (15,903)	
Yes	95.26 (4,801)	95.02 (4,744)	96.16 (4,807)	93.29 (4,669)	89.59 (4,421)	
Variable	No	Yes	No	Yes	No	Yes
	Mean(se)	Mean(se)	Mean(se)	Mean(se)	Mean(se)	Mean(se)
Age	8.21(0.29)	8.2 (0.08)	8.31(0.26)	8.21(0.09)	8.27(0.25)	8.21(0.08)
Perceived health status						
Child will have a healthy life	***1.49(0.05)	***1.27(0.01)	***1.44(0.04)	***1.27(0.01)	***1.41(0.04)	***1.27(0.01)
Child less healthy than other children	***4.23(0.77)	***4.61(0.10)	***4.24(0.07)	***4.61(0.01)	***4.32(0.29)	***4.61(0.01)
Child has never been seriously ill	**2.18(0.09)	**1.90(0.02)	***2.20(0.08)	***1.90(0.02)	*2.04(0.06)	*1.90(0.02)
Child gets sick easily	**3.49(0.08)	**3.71(0.02)	***3.47(0.06)	***3.71(0.02)	***3.41(0.06)	***3.72(0.02)
Worried about child's health	***3.04(0.09)	***3.58(0.03)	***2.96(0.09)	***3.59(0.03)	***2.74(0.09)	***3.59(0.03)
Clinic visits in the last 12 months	**2.99(0.13)	**2.60(0.02)	**2.90(0.09)	**2.61(0.02)	*2.81(0.09)	*2.61(0.02)
					**2.82(0.08)	**2.60(0.02)

Due to missing values, some cross-tabulations may not add up to total sample size. Weighted to be nationally-representative of children with at least one doctor's office or clinic or healthcare visit in previous 12 months (eligible for outcomes). Standard errors adjusted for complex survey design.

* p<0.05;

** p<0.01;

*** p<0.001;

design-based F-tests (group difference) for categorical variables; adjusted Wald tests (stratified by outcome: difference of yes vs. no means = 0) for continuous/ordinal variables

PFC: Patient- and family-centered care

Adjusted prevalence rate ratios for PFCC indicators (N=22,942 children, MEPS 2011-2013, weighted)

Table 3A

Factor	Measures of Parent-Perceived Quality of the Parent-Physician Relationship					Composite measure = 1
	Usually/always felt provider showed respect	Usually/always felt provider listened carefully	Usually/always felt provider explained things in an easily understandable way	Usually/always felt provider spent enough time with child		
	Adj. PRR (95% CI) [†]	Adj. PRR (95% CI) [†]	Adj. PRR (95% CI) [†]	Adj. PRR (95% CI) [†]	Adj. PRR (95% CI) [†]	
Insurance (omitted: any private)						
Public only	***0.978 (0.966, 0.990)	***0.981 (0.967, 0.994)	***0.981 (0.971, 0.991)	*0.984 (0.968, <1.000)	***0.962 (0.944, 0.985)	
Uninsured	0.997(0.984, 1.011)	0.985 (0.968, 1.002)	0.991 (0.976, 1.006)	0.983 (0.960, 1.006)	0.981 (0.955, 1.007)	
Race/ethnicity (omitted: Non-Hispanic White)						
Hispanic	*1.012 (1.001, 1.024)	1.004 (0.994, 1.015)	1.001 (0.989, 1.013)	*0.982 (0.967, 0.997)	0.987 (0.966, 1.008)	
Non-Hispanic Black	1.008 (0.996, 1.020)	0.991 (0.978, 1.004)	0.999 (0.987, 1.011)	0.986 (0.970, 1.002)	0.981 (0.961, 1.001)	
Non-Hispanic Asian	0.993 (0.972, 1.015)	0.984 (0.958, 1.011)	0.987 (0.972, 1.002)	0.969 (0.932, 1.008)	0.973 (0.937, 1.012)	
Non-Hispanic other/multiple race	1.011 (0.998, 1.025)	*1.014 (1.003, 1.025)	1.003 (0.990, 1.018)	1.002 (0.985, 1.020)	1.008 (0.986, 1.031)	
Male	0.998 (0.991, 1.004)	0.998 (0.991, 1.005)	1.000 (0.995, 1.006)	1.001 (0.991, 1.010)	1.003 (0.990, 1.015)	
Age	1.000 (0.999, 1.001)	0.999 (0.999, 1.000)	0.999 (0.999, 0.999)	1.000 (0.999, 1.001)	0.999 (0.998, 1.001)	
Census Region (omitted: Northeast)						
Midwest	0.991 (0.991, 1.003)	0.989 (0.978, 1.001)	0.997 (0.988, 1.006)	1.009 (0.997, 1.021)	1.002 (0.985, 1.020)	
South	0.990 (0.978, 1.002)	0.994 (0.984, 1.004)	0.994 (0.985, 1.002)	0.998 (0.984, 1.013)	0.995 (0.977, 1.014)	
West	***0.979 (0.964, 0.994)	*0.980 (0.968, 0.993)	*0.986 (0.974, 0.997)	*0.983 (0.969, 0.998)	***0.968 (0.947, 0.990)	
Foreign-born	0.999 (0.978, 1.020)	0.986 (0.959, 1.014)	1.004 (0.984, 1.024)	1.013 (0.985, 1.042)	0.991 (0.955, 1.029)	
Family income as % of FPL (omitted: <100%)						
100-124%	1.006 (0.986, 1.025)	1.006 (0.985, 1.028)	1.004 (0.985, 1.025)	1.014 (0.987, 1.042)	1.018 (0.985, 1.052)	
125-199%	1.008 (0.994, 1.023)	1.014 (1.000, 1.029)	1.014 (0.999, 1.029)	*1.022 (1.001, 1.044)	*1.026 (1.000, 1.053)	
200-399%	1.011 (0.997, 1.026)	1.014 (0.997, 1.031)	**1.024 (1.008, 1.040)	*1.027 (1.002, 1.051)	**1.040 (1.010, 1.071)	
400+%	**1.018 (1.004, 1.032)	**1.029 (1.011, 1.047)	***1.033 (1.017, 1.049)	***1.045 (1.021, 1.069)	***1.056 (1.026, 1.088)	

Measures of Parent-Perceived Quality of the Parent-Physician Relationship					
Factor	Usually/always felt provider showed respect	Usually/always felt provider listened carefully	Usually/always felt provider explained things in an easily understandable way	Usually/always felt provider spent enough time with child	Composite measure = 1
	Adj. PRR (95% CI) [/]	Adj. PRR (95% CI) [/]	Adj. PRR (95% CI) [/]	Adj. PRR (95% CI) [/]	Adj. PRR (95% CI) [/]
Child with special healthcare needs	**0.985 (0.974, 0.996)	0.993 (0.982, 1.004)	0.997 (0.988, 1.006)	**0.985 (0.975, 0.995)	*0.983 (0.970, 0.997)
Perceived health status					
Child will have a healthy life	0.993 (0.985, 1.002)	0.997 (0.989, 1.006)	0.994 (0.987, 1.002)	0.992 (0.981, 1.003)	*0.986 (0.972, <1.000)
Child less healthy than other children	*1.008 (1.000, 1.015)	1.007 (0.999, 1.015)	1.006 (0.999, 1.013)	1.007 (0.999, 1.014)	*1.010 (1.001, 1.019)
Child has never been seriously ill	1.001 (0.998, 1.004)	0.999 (0.997, 1.002)	0.999 (0.997, 1.002)	1.002 (0.999, 1.005)	1.001 (0.997, 1.006)
Child gets sick easily	1.000 (0.996, 1.003)	1.001 (0.997, 1.004)	1.000 (0.997, 1.003)	1.004 (0.999, 1.008)	1.004 (0.998, 1.009)
Worried about child's health	*1.003 (1.001, 1.005)	**1.005 (1.002, 1.008)	***1.005 (1.003, 1.008)	*1.004 (1.000, 1.007)	*1.007 (1.002, 1.011)
Clinic visits in the last 12 months	0.997 (0.908, 1.003)	*0.997 (0.994, <1.000)	0.998 (0.996, 1.000)	*0.996 (0.993, <1.000)	*0.993 (0.988, 0.998)

[/] Derived from Poisson regression analysis using all listed factors as covariates. Weighted to be nationally-representative of children with at least one doctor's office or clinic or healthcare visit in previous 12 months (eligible for outcomes). Standard errors adjusted for complex survey design.

* p<0.05

** p<0.01

*** p<0.001

PFCC: Patient- and family-centered care

Adjusted odds ratios for PFCC indicators (N=22,942 children, MEPS 2011-2013, weighted)

Measures of Parent-Perceived Quality of the Parent-Physician Relationship					
Factor	Usually/always felt provider showed respect	Usually/always felt provider listened carefully	Usually/always felt provider explained things in an easily understandable way	Usually/always felt provider spent enough time with child	Composite measure = 1
	Adj. OR (95% CI) ¹	Adj. OR (95% CI) ¹	Adj. OR (95% CI) ¹	Adj. OR (95% CI) ¹	Adj. OR (95% CI) ¹
Insurance (omitted: any private)					
Public only	***0.511 (0.962, 0.995)	***0.604 (0.421, 0.867)	***0.529 (0.374, 0.748)	0.741 (0.549, 1.002)	**0.650 (0.505, 0.835)
Uninsured	0.923(0.508, 1.679)	*0.614(0.386, 0.977)	0.631 (0.358, 1.114)	0.676 (0.437, 1.048)	0.738 (0.518, 1.050)
Race/ethnicity (omitted: Non-Hispanic White)					
Hispanic	*1.417 (1.010, 1.988)	1.089 (0.816, 1.452)	1.012 (0.685, 1.495)	*0.712 (0.541, 0.936)	0.845 (0.656, 1.088)
Non-Hispanic Black	1.260 (0.881, 1.802)	0.796 (0.576, 1.100)	0.942 (0.635, 1.397)	*0.731 (0.542, 0.987)	*0.773 (0.606, 0.987)
Non-Hispanic Asian	0.790 (0.427, 1.463)	0.635 (0.343, 1.173)	*0.590 (0.364, 0.955)	*0.525 (0.284, 0.973)	0.680 (0.433, 1.067)
Non-Hispanic other/multiple race	1.509 (0.859, 2.649)	*1.666 (1.017, 2.727)	1.141 (0.592, 2.196)	1.020 (0.665, 1.565)	1.108 (0.773, 1.589)
Male	0.933 (0.746, 1.167)	0.940 (0.766, 1.153)	1.004 (0.819, 1.230)	1.014 (0.841, 1.224)	1.035 (0.880, 1.218)
Age	0.994 (0.970, 1.018)	0.986 (0.964, 1.009)	*0.973 (0.950, 0.996)	1.004 (0.983, 1.025)	0.994 (0.977, 1.010)
Census Region (omitted: Northeast)					
Midwest	0.712 (0.443, 1.144)	0.707 (0.486, 1.029)	0.876 (0.583, 1.317)	1.216 (0.912, 1.622)	1.029 (0.790, 1.341)
South	0.691 (0.434, 1.100)	0.804 (0.576, 1.122)	0.771 (0.543, 1.095)	0.956 (0.708, 1.289)	0.934 (0.723, 1.207)
West	**0.481 (0.297, 0.779)	**0.565 (0.396, 0.808)	*0.603 (0.408, 0.891)	*0.734 (0.559, 0.964)	**0.672 (0.515, 0.875)
Foreign-born	0.953 (0.491, 1.850)	0.743 (0.432, 1.279)	1.159 (0.639, 2.102)	1.24 (0.714, 2.136)	0.901 (0.609, 1.334)
Family income as % of FPL (omitted: <100%)					
100-124%	1.133 (0.727, 1.765)	1.103 (0.745, 1.634)	1.078 (0.725, 1.602)	1.197 (0.826, 1.735)	1.159 (0.866, 1.551)
125-199%	1.228 (0.875, 1.722)	1.320 (0.983, 1.773)	1.310 (0.951, 1.803)	1.327 (0.974, 1.807)	1.241 (0.976, 1.577)
200-399%	1.330 (0.895, 1.978)	1.277 (0.870, 1.874)	**1.892 (1.214, 2.948)	1.455 (0.984, 2.151)	*1.482 (1.083, 2.028)
400+%	**1.884 (1.177, 3.016)	***2.643 (1.597, 4.373)	***4.552 (2.410, 8.597)	***2.574 (1.589, 4.171)	***2.056 (1.395, 3.030)

Measures of Parent-Perceived Quality of the Parent-Physician Relationship					
Factor	Usually/always felt provider showed respect	Usually/always felt provider listened carefully	Usually/always felt provider explained things in an easy understandable way	Usually/always felt provider spent enough time with child	Composite measure = 1
	Adj. OR (95% CI) ^I	Adj. OR (95% CI) ^I	Adj. OR (95% CI) ^I	Adj. OR (95% CI) ^I	Adj. OR (95% CI) ^I
Child with special healthcare needs	**0.645 (0.486, 0.856)	**0.833 (0.745, 1.634)	0.892 (0.662, 1.200)	**0.744 (0.618, 0.894)	**0.809 (0.690, 0.949)
Perceived health status					
Child will have a healthy life	0.883 (0.753, 1.035)	0.953 (0.812, 1.118)	0.874 (0.748, 1.021)	0.886 (0.765, 1.026)	0.876 (0.779, 0.985)
Child less healthy than other children	*1.140 (1.003, 1.296)	1.107 (0.979, 1.252)	1.098 (0.958, 1.259)	1.076 (0.981, 1.180)	*1.068 (0.993, 1.149)
Child has never been seriously ill	1.016 (0.934, 1.106)	0.973 (0.912, 1.039)	0.965 (0.896, 1.039)	1.036 (0.978, 1.096)	1.011 (0.961, 1.063)
Child gets sick easily	0.988 (0.889, 1.098)	1.016 (0.933, 1.107)	1.003 (0.916, 1.099)	1.063 (0.986, 1.147)	1.044 (0.979, 1.114)
Worried about child's health	*1.093 (1.021, 1.170)	**1.138 (1.054, 1.229)	***1.197 (1.108, 1.292)	*1.071 (1.006, 1.139)	**1.085 (1.030, 1.144)
Clinic visits in the last 12 months	0.910 (0.822, 1.006)	*0.917 (0.855, 0.984)	0.938 (0.874, 1.008)	*0.927 (0.867, 0.992)	**0.911 (0.859, 0.967)

^I Derived from logistic regression analysis using all listed factors as covariates. Weighted to be nationally-representative of children with at least one doctor's office or clinic or healthcare visit in previous 12 months (eligible for outcomes). Standard errors adjusted for complex survey design.

* p<0.05

** p<0.01

*** p<0.001

PFCC: Patient- and family-centered care