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Adolescents' and young adults' routine care use: The role of their mothers' care use behaviors

Madhuli Y. Thakkar, MPH¹, Lingxin Hao, PhD², and Arik V. Marcell, MD, MPH¹

¹Johns Hopkins University School of Medicine, 1800 Orleans Street, Baltimore, MD 21287, USA

²Krieger School of Arts and Sciences, 3400 N. Charles St, Baltimore, MD 21218, USA

Abstract

Purpose—Little is known whether mothers own care use is differentially associated with their adolescents' routine care use by gender. This study's main purpose is to examine whether mothers' healthcare use prospectively predicts their adolescents' routine care use stratified by gender, after controlling for predisposing (child's age, race/ethnicity, region of residence, urbanicity, mother's age at child's birth), enabling (mother's education, adolescent and mother health insurance), and need (child health status) factors.

Methods—In 2018, a prospective analysis was conducted using data from 5,040 adolescents aged 9–24 and their mothers who completed the two-generation National Longitudinal Survey of Youth (NLSY) in 2006 (first interview) and 2008 (second interview). Findings include percentages and adjusted odds ratios of the factors that predict adolescents' self-report of a routine care use in the past year measured at the second interview.

Results—In 2008, over half of participants reported a routine doctor visit during the prior 12 months and this varied by gender; more females (68.7%) had a visit than males (53.5%). Factors that independently predicted a greater odds of adolescents' routine doctor visits included mothers with routine doctor visits at both interviews or the second interview only, and adolescents' health insurance and past routine visit, regardless of gender. Males aged 18–20 and 21–24 had lower odds of having a routine doctor visit than males aged 9–11.

Conclusions—This study provides evidence for the potential role that mothers' care use can play in their adolescents' routine care use, especially for their sons, independent of insurance status.

Keywords

adolescents; young adults; routine healthcare use; mothers' routine healthcare use

Corresponding Author: Arik V. Marcell, MD, MPH, Associate Professor, Departments of Pediatrics and Population, Family & Reproductive Health, The Johns Hopkins University School of Medicine & Bloomberg School of Public Health, 200 N. Wolfe St, Room 2062, Baltimore, MD 21287, 443-287-8946 (t); 410-502-5440 (f), amarcell@jhu.edu.

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The American Academy of Pediatrics' Bright Futures guidance recommends adolescents and young adults through age 21 years old receive routine clinical preventive services each year.¹⁻³ Evidence demonstrates the role of well-visits on the health of children and adolescents and its potential positive impact on their health later in life.^{4,5} However, male adolescents experience increasing disconnections from healthcare, especially as they transition into young adulthood.⁶⁻⁸

Recent work highlights that young men's perceived facilitators and barriers to care use, specifically related to sexual and reproductive healthcare, come from multiple levels of their socio-ecology, including socio-cultural, structural, and personal contexts.⁹ In a previous study, young men discussed how persons in their family and social network, especially their mothers, played important roles as information and care sources.⁹ A better understanding of the role that parents, and especially mothers, play in the routine healthcare of their sons can inform strategies to keep parents engaged. This is especially relevant since the majority of mothers of children under 18 report they make their children's doctors' appointments (>80%) and coordinate their healthcare.^{10,11} It is possible that mothers are differentially involved in their daughter's versus their son's routine healthcare, since female adolescents typically receive clearer messages about the importance of prevention related to gynecologic concerns (e.g., related to menstrual issues, contraception needs, etc).^{12,13} It is also possible that parents who engage in preventive care have adolescent children with similar proclivities, either through direct parent involvement or adolescents' modeling of parent behaviors.¹⁴

Beyond examining well-established predisposing, enabling and need factors that have been found to be associated with adolescents' routine healthcare use (e.g., race/ethnicity, health insurance, region of residence, prior routine healthcare use)¹⁵⁻¹⁹, a few studies have demonstrated the important role that parents play in adolescents' routine care use²⁰⁻²³ or visits in general, regardless of visit type (an important enabling factor of care use).²⁴⁻²⁷ However, these studies are limited by a number of factors. First, most of these studies do not stratify their results by gender, making it difficult to examine the differential impact that parents care use plays on female versus male adolescent children.²⁰⁻²⁷ Second, most prior studies rely solely on parent report of their adolescent's healthcare use that is potentially biased by recall and reporting.²²⁻²⁵ Finally, although one study indicated that children are more likely to miss recommended visits if their parents did not make a physician visit that year, this study's findings may be biased since it only included adolescents who had healthcare interactions, and excluded those without visits.²⁰

The National Longitudinal Survey of Youth (NLSY) provides a unique opportunity to address current gaps in the literature and use data from two generations – mothers and their adolescent children. The main goal of this prospective analysis was to examine whether mothers' healthcare use (enabling factors) is associated with their adolescents' routine care use stratified by gender, after controlling for other known enabling, need, and predisposing factors.

Methods

Population and procedures

Data for our analyses come from the publically available two-generation mother-child NLSY. Data from mothers come from the NLSY79 (1979), a nationally representative sample of 6,283 females and 6,403 males born from 1957 to 1964. Data from children come from the NLSY79 Child/Young Adult, a biennial survey of all biological children born to NLSY79 female respondents that began in 1986. Data from 2006 and 2008 were chosen since they represent the most complete recent NLSY data for a sufficient sample of adolescents across a wide age range (from early adolescence to young adulthood). Survey administration was conducted in participants' homes by trained interviewers followed by a self-administered survey to collect more sensitive information. Information about this study's survey design, and sampling and consent procedures are available elsewhere.²⁸ The analytic sample for this analysis was limited to 5,040 adolescents who were born from 1982 to 1997, and aged 8–24 years in 2006. Data from mothers and their adolescents were linked for analysis.

Measures of predictor variables

Enabling factors—Mother's education was categorized as 11th grade or less, high school diploma or general educational development (GED), or college or more. Health insurance for adolescents and mothers in 2006 (first interview) and 2008 (second interview) was categorized as no insurance at either interview, insured at first but not second interview, insured at second but not first interview, or insured at both interviews.

Adolescent routine doctor visit obtained in 2006 by: "When (child/young adult) last saw doctor for routine health checkup?" with responses less than 1 month, 1–3 months, 4–6 months, 7–11 months, 1 year to 23 months, 2 years or more, or never and coded as routine doctor visit during the 12 months preceding the first interview or 1 year or more/never.

Mothers' routine doctor visit was collected in 2006 and 2008 by: "How long since your last physical examination?" with responses 1 year ago or less, more than 1 year but not more than 2 years, more than 2 years but not more than 3 years, more than 3 years but not more than 5 years, over 5 years ago, or never and coded as routine doctor visit in the last year or more than 1 year/never. A combined measure was created to categorize mothers' visits as follows: no visits reported at either interview, visit during the 12 months preceding the first but not second interview, visit during the 12 months preceding the second but not first interview, or visits during the 12 months preceding both interviews.

Need factors—Health status coded as poor/fair/good versus very good/excellent.

Predisposing factors—Gender coded as female or male; age categorized by age group in years: 8–11, 12–14, 15–17, 18–20, or 21–24; race/ethnicity classified as non-Hispanic White, non-Hispanic Black, or Hispanic (excluding other races); U.S. region of residence categorized as Northeast, Northcentral, South, or West; urban or rural residence; and mother's age at child's birth categorized by age group in years: 15–19, 20–24, 25–29, or 30 or older.

Measure of outcome variable

Adolescent routine doctor visit was assessed in 2008 by: “When (child/young adult) last saw doctor for routine health checkup?” with responses less than 1 month, 1–3 months, 4–6 months, 7–11 months, 1 year to 23 months, 2 years or more, or never and coded as routine doctor visit during the 12 months preceding the second interview or 1 year or more/never.

Data analysis

Secondary data analysis was approved by Johns Hopkins University human subjects review board. As in any survey data, missing data are ubiquitous. Rather than using the potentially selective sample with valid data on all variable in our analysis, we performed multiple imputation using STATA/MP 14.0 to produce 30 complete datasets which take into account the imputation uncertainty and carried out statistical analysis based on these complete datasets using Rubin’s rule.²⁹ Descriptive statistics reported for the imputed sample are weighted (i.e., sampling weights were used in analysis to account for over-representation of non-Hispanic Black and Hispanic respondents, sampling design, and sample attrition to produce the population patterns).³⁰

The analysis procedure is as follows. First, we examined the distribution of each variable used in the analysis and the cross-tabulations of adolescents’ routine care use during the 12 months preceding the second interview by gender and by each study covariate using an F-test (Table 1). Next, we examined separate logistic regression models for the bivariate association between adolescents’ routine care use with each covariate stratified by gender (Tables 2 and 3, Column 1). A P-value of < .10 determined variables to include in the final models. Multivariable analyses were then performed stratified by gender (Tables 2 and 3, Columns 2–5); separate logistic regression models were conducted where all covariates were entered simultaneously into the regression model to produce adjusted odds ratios (aOR) to examine the partial association between covariates with the study outcome. For these analyses, region of residence was coded as Northeast versus other regions and mothers’ age at birth was coded as 15–19 years versus 20 years or older, since preliminary analyses did not find differences for the other categories. Sensitivity bivariate and multivariable analyses were performed and no differences were found in the results with and without missing data; thus analyses using imputed data are presented below.

Results

During the 12 months preceding the second interview, 61.1% of respondents reported having a routine doctor visit (Table 1) and half of respondents were female (49.6%).

Just over half of respondents’ mothers had a routine doctor visit at both interviews (60.3%), about half of respondents’ mothers had a college degree or more (49.4%), and 72.9% of adolescents and 76.8% of mothers were insured at both interviews. During the 12 months preceding the first interview, 63.7% of adolescents had a routine doctor visit and 65.8% reported being in very good/excellent health.

Respondents’ ages were distributed across age groups; respondents’ mean (+/– SD) age was 17.3 (+/–0.07) years (not shown). Almost one-half of respondents were non-Hispanic White

(48.2%), 14.6% lived in the Northeast, 77.1% lived in urban settings, and 3.5% were born to teen mothers.

Routine care use by gender

A higher proportion of females reported having a routine doctor visit (68.7%) than males (53.5%) (Table 1) and F-tests revealed a higher proportion of females than males had a routine doctor visit for each background characteristic.

Predictors of routine care use stratified by gender: Bivariate analyses

Among females, bivariate analyses found that females were more likely to have a routine doctor visit at the second interview if their mother had a routine visit in the 12 months preceding both interviews or only the second interview (Table 2). Females were also more likely to have a routine doctor visit if they had insurance at both interviews or the second interview; a mother with insurance at the second interview; a routine doctor visit during the 12 months preceding the first interview; very good/excellent health; and a mother with college or more education. Females aged 21–24 years were less likely to report a routine doctor visit than females aged 9–11 years.

Among males, bivariate analyses revealed that males were more likely to have a routine doctor visit at the second interview if their mother had a routine visit in the 12 months preceding both interviews or only the second interview (Table 3). Males were also more likely to have a routine doctor visit if they had insurance at both interviews or either interview; had a mother with insurance at both interviews or the second interview; had a routine doctor visit during the 12 months preceding the first interview; lived in the Northeast; lived in urban setting; and had a mother with college or more education. Males aged 18–20 and 21–24 years were less likely to report a routine doctor visit than males aged 9–11 years.

Predictors of routine care use stratified by gender: Multivariate analysis

Female adolescents' mother's routine doctor visits, insurance, past routine doctor visit, and age predicted having a routine doctor visit during the 12 months preceding the second interview, all else equal (Table 2, last two columns). Having a mother with a routine doctor visit during the 12 months preceding both interviews or only the second interview (1.63 [1.23–2.16] and 1.52 [1.07–2.15], respectively) increased the odds for female adolescents to have a routine doctor visit (see also Figure 1). Females' odds of having a routine doctor visit were also greater if they had insurance at both interviews or the second interview (2.49 [1.71–3.66] and 2.29 [1.45–3.61], respectively); and if they had a routine doctor visit during the 12 months preceding the first interview (1.82 [1.49–2.21]). The odds of having a routine doctor visit were decreased among females aged 21–24 years than females aged 9–11 years (0.67 [0.48–0.94]) (see also Figure 2).

Male adolescents' mother's routine doctor visits, insurance, past routine doctor visit, age, and region of residence predicted having a routine doctor visit during the 12 months preceding the second interview, holding other factors constant (see Table 3, last two columns). Having a mother with a routine doctor visit during the 12 months preceding both

interviews or only the second interview (1.84 [1.37–2.46] and 1.71 [1.22–2.40], respectively) increased the odds for male adolescents to have a routine doctor visit (see also Figure 1). Males' odds of having a routine doctor visit were also greater if they had insurance at both interviews or only the second interview (2.83 [1.97–4.06] and 2.04 [1.28–3.24], respectively); had a routine doctor visit during the 12 months preceding the first interview (2.28 [1.88–2.76]), and lived in the Northeast versus other regions (1.62 [1.24–2.13]). The odds of having a routine doctor visit were decreased among males age 18–20 and 21–24 years than males aged 9–11 years (0.46 [0.32–0.65] and 0.42 [0.29–0.59], respectively) (see also Figure 2).

Discussion

Mothers' routine care use was found to be prospectively associated with their adolescent children's routine care use, regardless of their child's gender, and after controlling for adolescents' other predisposing, enabling, and need factors. This is one of the first studies to provide evidence for the association of mothers' own care use behaviors on that of their sons. These findings highlight the important role that intergenerational behavioral-oriented interventions could play in promoting adolescents' routine care use – especially strategies that target ways for mothers to keep their sons' engaged in the healthcare system.³¹

Findings in the current study contributes to a body of literature that extols the important role that mothers can play in their adolescent daughters' and sons' healthcare and well-being.^{20–27} These findings extend this past literature by examining the role of mothers' care use separately on their daughters' and sons' care use after controlling for other key predisposing, enabling, and need factors and relying on adolescent report whenever possible rather than solely parent report. Although the current study is not able to disentangle the direction of the main study's findings, it provides preliminary evidence of preventive care proclivities at the household level rather than mothers having a differential influence by gender on their adolescent children's care use. These findings point to the need for future research and public health strategies that evaluate keeping male adolescents engaged in healthcare. First, strategies are needed to promote maintaining mothers' engagement in the healthcare of their sons during adolescence and as they transition into adulthood. Second, interventions that cue adolescents into health promotion at the family level may deserve attention within the context of adolescents' social learning from their mother's care use.¹⁴ Finally, such intergenerational behavior-oriented interventions may be beneficial to go beyond promoting routine care use to promoting other healthy behaviors (e.g., healthy eating, adequate physical activity, etc.)³² as well as examining other behaviors within the family (e.g., paternal health behaviors, siblings' care use, household illness) that may influence adolescents' routine care use.

This study identified similar routine care use reports as past studies from this period as well as differences in adolescents' routine care use by gender and age.^{31,33–35} In the current study, far fewer young adult males than females reported a routine care visit and were also almost 50% less likely to have a routine doctor visit as compared to younger males. Although the current study focused on routine care use before implementation of the Affordable Care Act (ACA) in 2010, the relationship between mothers' care use and their

adolescents' care use was independent of respondents' health insurance status. Further, a recent study reported that despite modest improvements in adolescents' routine care use post ACA overall routine care use rates still remain low with a dramatic decrease for males after age 16 years (by more than 50%).^{36,37} These findings reinforce the need to identify other strategies, along with ACA legislation, that promote the value of routine care use by adolescents.

This analysis has a number of limitations. The NLSY79-Child/Young Adult sample used in this analysis is only representative of children born to women who were aged 14–21 years in 1979 and does not include new mothers or children of immigrants after this period. The NLSY design is limited to interviews that were conducted biennially rather than annually, although this may have helped to reduce any overlap that could have occurred in survey responses given the 1-year recall period for the main outcome. The NLSY assesses only routine doctor visits; other visits may have occurred not captured in this analysis. Mothers responded for adolescents aged 14 or younger on their routine doctor visits which may not capture visits that mothers were unaware, although this may be less likely given children's younger age and the non-sensitive nature of doctor visits. Despite these limitations, the NLSY, consisting of two generations of data, provides a unique opportunity to examine prospectively mothers and their adolescents routine care use, stratified by gender, within the context of an organized care use framework.

This study highlights the important influence of mothers' routine healthcare on their adolescent children's routine care not only for daughters but also for sons. Study findings highlight the need to develop strategies to engage mothers in their adolescents' routine care, especially for their sons as they transition from adolescence into adulthood.

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Acronyms

CI	Confidence Interval
NLSY	National Longitudinal Survey of Youth
GED	General educational development
OR	Odds ratio
aOR	adjusted odds ratio

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Implications and Contribution

This study provides evidence for the important role that mothers' care use plays in their adolescents' routine care use, especially for their sons, independent of insurance. Findings highlight the need to develop strategies to increase mother involvement in their adolescents' routine care, especially for their sons, during transition from adolescence into adulthood.

Figure 1.

Adjusted odds ratio (aOR)* of adolescents' routine care use by mothers' routine care use stratified by adolescents' gender

Figure 2.

Adjusted odds ratio (aOR)* of adolescents' routine care use by age group and gender

Table 1

Adolescents' background characteristics, routine doctor visit (assessed in 2008), and percent routine doctor visits by background characteristics (N=5,040)

Background characteristics	Total		Among each characteristic, adolescent routine doctor visit during last 12 months (assessed in 2008)				p-value
	N ^a	% ^b	Females		Males		
			N ^a	% ^b	N ^a	% ^b	
Main outcome							
Adolescent routine doctor visit during last 12 months (assessed in 2008) ^a							
No	1,814	38.9	–	–	–	–	
Yes	2,874	61.1	–	–	–	–	
Missing	352						
Adolescent gender							<0.001
Female	2,536	49.6	1,629	68.7	–	–	
Male	2,504	50.4	–	–	1,245	53.5	
Enabling factors							
Mother routine doctor visit during last 12 months							
No in either year	596	12.2	157	57.2	112	38.9	<0.001
Yes in 2006 (no in 2008)	557	11.4	158	62.9	124	47.1	0.003
Yes in 2008 (no in 2006)	776	15.9	249	69.7	198	54.5	<0.001
Yes in both years	2,938	60.3	1,017	71.7	766	57.6	<0.001
Missing (2006 and/or 2008) ^d	173	–	48	–	45	–	–
Mother education level							
11th grade or less	478	10.2	147	64.8	101	47.5	<0.001
High school diploma or GED	2,038	40.4	645	65.7	452	49.0	<0.001
College or more	2,424	49.4	803	72.0	666	58.3	<0.001
Missing ^c	100	–	34	–	26	–	–
Adolescent health insurance status							
Not insured in either year	394	8.4	66	45.7	55	24.5	0.001
Insured in 2006 (not in 2008)	498	10.9	122	54.8	91	35.7	<0.001
Insured in 2008 (not in 2006)	368	7.7	129	66.9	68	43.5	<0.001

	Among each characteristic, adolescent routine doctor visit during last 12 months (assessed in 2008)					
	Total		Females		Males	
	N ^a	% ^b	N ^a	% ^b	N ^a	% ^b
Background characteristics						
Insured both years	3,408	72.9	1,262	72.6	990	61.9
Missing (2006 and/or 2008) ^d	372	—	50	—	41	—
Mother health insurance status						
Not insured in either year	430	8.9	128	65.0	82	39.3
Insured in 2006 (not in 2008)	286	5.9	81	58.1	63	50.1
Insured in 2008 (not in 2006)	403	8.4	139	75.8	91	49.7
Insured both years	3,754	76.8	1,235	69.2	967	55.9
Missing (2006 and/or 2008) ^d	167	—	46	—	42	—
Adolescent routine doctor visit during last 12 months (assessed in 2006)						
No	1,714	36.3	380	56.9	354	37.5
Yes	3,030	63.7	1,169	73.7	837	65.6
Missing ^c	296	—	80	—	54	—
Need factors						
Adolescent health status						
Poor, fair, or good	1,300	34.1	433	65.9	238	50.2
Very good or excellent	2,398	65.8	728	70.4	542	54.9
Missing ^d	1,342	—	468	—	465	—
Predisposing factors						
Adolescent age group in years						
9–11	550	10.9	203	75.1	178	68.7
12–14	803	15.9	269	70.8	291	70.9
15–17	1,076	21.3	335	70.3	340	63.9
18–20	1,106	21.9	346	70.9	198	42.8
21–24	1,505	29.9	476	62.9	238	37.5
Adolescent race/ethnicity						
Non-Hispanic White	2,429	48.2	773	68.4	607	53.8
Non-Hispanic Black	1,523	30.2	530	72.0	371	54.9
Hispanic	1,088	21.6	326	64.5	267	50.7
						<i>p</i> -value
						<0.001
						—
						<0.001
						0.243
						<0.001
						<0.001
						—
						<0.001
						<0.001
						—
						<0.001
						<0.001
						—
						<0.001
						<0.001
						0.106
						0.973
						0.035
						<0.001
						<0.001
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	Among each characteristic, adolescent routine doctor visit during last 12 months (assessed in 2008)						<i>p</i> -value
	Total		Females		Males		
	N ^{<i>a</i>}	% ^{<i>b</i>}	N ^{<i>a</i>}	% ^{<i>b</i>}	N ^{<i>a</i>}	% ^{<i>b</i>}	
Background characteristics							
Adolescent region of residence							
Northeast	715	14.6	237	70.3	220	66.4	0.287
Northcentral	1,296	26.4	436	69.9	283	48.0	<0.001
South	1,935	39.6	628	69.5	476	53.8	<0.001
West	940	19.4	277	64.0	225	50.8	<0.001
Missing ^{<i>c</i>}	154	—	51	—	41	—	—
Adolescent rural/urban residence							
Rural	1,092	22.9	324	65.5	259	49.6	<0.001
Urban	3,661	77.1	1,215	69.6	913	54.7	<0.001
Missing or unknown ^{<i>d</i>}	287	—	90	—	73	—	—
Mother age group in years at child's birth							
15–19	175	3.5	62	63.9	31	47.6	0.045
20–24	1,340	26.6	434	66.1	205	36.3	<0.001
25–29	1,946	38.6	574	67.2	486	53.0	<0.001
30 or older	1,579	31.3	559	73.4	523	68.5	0.144

GED= General educational development

^aData are unweighted^bData are weighted and imputed^cReported *p*-values based on results on F-tests examining relationship between routine healthcare use during the 12 months preceding the second interview for each covariate by gender^dReasons for missing: valid skips (not eligible for a particular that year), invalid skip (interviewer or respondent incorrectly skipped a question); all missing data imputed using Stata.14

Table 2

Unadjusted and adjusted odds ratio (OR) for factors associated with female adolescents' routine doctor visit (assessed in 2008) (N=2,536)

Background characteristics	Factors associated with females' routine doctor visit (assessed in 2008)			
	OR (95% CI) ^a	p-value	aOR (95% CI) ^{b,c}	p-value
Enabling factors				
Mother routine doctor visit during last 12 months				
No in either year	Ref		Ref	
Yes in 2006 (no in 2008)	1.27 (0.89–1.81)	0.177	1.19 (0.82–1.71)	0.365
Yes in 2008 (no in 2006)	1.72 (1.24–2.40)	0.001	1.52 (1.07–2.15)	0.018
Yes in both years	1.89 (1.46–2.47)	<0.001	1.63 (1.23–2.16)	0.001
Mother education level				
11th grade or less	Ref		Ref	
High school diploma or GED	1.04 (0.77–1.40)	0.793	0.92 (0.67–1.28)	0.633
College or more	1.39 (1.04–1.88)	0.029	1.16 (0.83–1.63)	0.378
Adolescent health insurance status				
Not insured in either year	Ref		Ref	
Insured in 2006 (not in 2008)	1.44 (0.95–2.19)	0.085	1.19 (0.78–1.85)	0.429
Insured in 2008 (not in 2006)	2.40 (1.55–3.72)	<0.001	2.29 (1.45–3.61)	<0.001
Insured both years	3.14 (2.23–4.44)	<0.001	2.49 (1.71–3.66)	<0.001
Mother health insurance status				
Not insured in either year	Ref		Ref	
Insured in 2006 (not in 2008)	0.75 (0.48–1.16)	0.193	0.66 (0.41–1.05)	0.081
Insured in 2008 (not in 2006)	1.68 (1.08–2.61)	0.021	1.32 (0.83–2.11)	0.241
Insured both years	1.21 (0.89–1.64)	0.218	0.75 (0.53–1.06)	0.105
Adolescent routine doctor visit during last 12 months (assessed in 2006)				
No	Ref		Ref	
Yes	2.12 (1.76–2.55)	<0.001	1.82 (1.49–2.21)	<0.001
Need factors				
Adolescent health status				
Poor, fair, or good	Ref		Ref	
Very good or excellent	1.23 (1.01–1.51)	0.041	1.17 (0.95–1.44)	0.128
Predisposing factors				
Adolescent age group in years				
9–11	Ref		Ref	
12–14	0.80 (0.56–1.14)	0.218	0.78 (0.54–1.12)	0.177
15–17	0.78 (0.56–1.10)	0.155	0.79 (0.56–1.12)	0.192
18–20	0.81 (0.58–1.13)	0.211	0.92 (0.65–1.31)	0.648
21–24	0.56 (0.41–0.76)	<0.001	0.67 (0.48–0.94)	0.020
Adolescent race/ethnicity				
Non-Hispanic White	Ref		Ref	

Background characteristics	Factors associated with females' routine doctor visit (assessed in 2008)			
	OR (95% CI) ^a	p-value	aOR (95% CI) ^{b,c}	p-value
Non-Hispanic Black	1.19 (0.97–1.46)	0.088	1.13 (0.91–1.42)	0.276
Hispanic	0.84 (0.67–1.05)	0.125	0.85 (0.67–1.09)	0.195
Adolescent region of residence	Ref		Ref	
Northcentral, South or West				
Northeast	1.09 (0.85–1.39)	0.502	0.99 (0.76–1.29)	0.948
Adolescent rural/urban residence				
Rural	Ref		Ref	
Urban	1.21 (0.98–1.49)	0.079	1.21 (0.96–1.52)	0.111
Mother age in years at child's birth				
20 or older	Ref		Ref	
15–19	0.80 (0.52–1.22)	0.299	1.08 (0.69–1.72)	0.739

OR indicates odds ratio and aOR indicates adjusted odds ratio

^aData from univariate Logistic regression models.

^bData from multivariable Logistic regression models.

^cData are adjusted ORs and 95% confidence intervals representing relationship between independent variable and routine doctor visits in the past year while controlling for all other independent variables in this table

Table 3

Unadjusted and adjusted odds ratio (OR) for factors associated with male adolescents' routine doctor visit (assessed in 2008) (N=2,504)

Background characteristics	Factors associated with males' routine doctor visit (assessed in 2008)			
	OR (95% CI) ^a	p-value	aOR (95% CI) ^{b,c}	p-value
Enabling factors				
Mother routine doctor visit during last 12 months				
No in either year	Ref		Ref	
Yes in 2006 (no in 2008)	1.39 (0.99–1.94)	0.052	1.25 (0.87–1.81)	0.231
Yes in 2008 (no in 2006)	1.87 (1.37–2.55)	<0.001	1.71 (1.22–2.40)	0.002
Yes in both years	2.12 (1.64–2.74)	<0.001	1.84 (1.37–2.46)	<0.001
Mother education level				
11th grade or less	Ref		Ref	
High school diploma or GED	1.06 (0.79–1.42)	0.683	0.94 (0.67–1.32)	0.725
College or more	1.55 (1.16–2.05)	0.003	1.06 (0.76–1.48)	0.737
Adolescent health insurance status				
Not insured in either year	Ref		Ref	
Insured in 2006 (not in 2008)	1.71 (1.16–2.51)	0.007	1.26 (0.83–1.92)	0.272
Insured in 2008 (not in 2006)	2.37 (1.54–3.65)	<0.001	2.04 (1.28–3.24)	0.003
Insured both years	5.01 (3.66–6.87)	<0.001	2.83 (1.97–4.06)	<0.001
Mother health insurance status				
Not insured in either year	Ref		Ref	
Insured in 2006 (not in 2008)	1.55 (0.99–2.43)	0.053	1.14 (0.69–1.88)	0.617
Insured in 2008 (not in 2006)	1.53 (1.03–2.27)	0.035	0.90 (0.58–1.40)	0.653
Insured both years	1.96 (1.46–2.62)	<0.001	0.91 (0.64–1.29)	0.608
Adolescent routine doctor visit during last 12 months (assessed in 2006)				
No	Ref		Ref	
Yes	3.17 (2.65–3.78)	<0.001	2.28 (1.88–2.76)	<0.001
Need factors				
Adolescent health status				
Poor, fair, or good	Ref		Ref	
Very good or excellent	1.21 (0.98–1.47)	0.075	0.97 (0.78–1.21)	0.811
Predisposing factors				
Adolescent age group in years				
9–11	Ref		Ref	
12–14	1.11 (0.79–1.56)	0.557	1.12 (0.78–1.59)	0.539
15–17	0.81 (0.59–1.11)	0.183	0.83 (0.59–1.16)	0.269
18–20	0.34 (0.25–0.47)	<0.001	0.46 (0.32–0.65)	<0.001
21–24	0.27 (0.20–0.37)	<0.001	0.42 (0.29–0.59)	<0.001
Adolescent race/ethnicity				
Non-Hispanic White	Ref		Ref	

Background characteristics	Factors associated with males' routine doctor visit (assessed in 2008)			
	OR (95% CI) ^a	p-value	aOR (95% CI) ^{b,c}	p-value
Non-Hispanic Black	1.05 (0.86–1.27)	0.643	1.23 (0.99–1.53)	0.066
Hispanic	0.88 (0.72–1.08)	0.230	1.21 (0.95–1.54)	0.119
Adolescent region of residence				
Northcentral, South or West	Ref		Ref	
Northeast	1.87 (1.46–2.39)	<0.001	1.62 (1.24–2.13)	<0.001
Adolescent rural/urban residence				
Rural	Ref		Ref	
Urban	1.22 (1.01–1.49)	0.038	1.02 (0.82–1.27)	0.859
Mother age in years at child's birth				
20 or older	Ref		Ref	
15–19	0.79 (0.48–1.28)	0.335	1.53 (0.88–2.64)	0.129

OR indicates odds ratio and aOR indicates adjusted odds ratio

^aData from univariate Logistic regression models.

^bData from multivariable Logistic regression models.

^cData are adjusted ORs and 95% confidence intervals representing relationship between independent variable and routine doctor visits in the past year while controlling for all other independent variables in this table