Masculine Beliefs, Parental Communication, and Male Adolescents' Health Care Use

Arik V. Marcell, MD, MPH[a], **Carol A. Ford, MD**[b], **Joseph H. Pleck, PhD**[c], and **Freya L. Sonenstein, PhD**[d]

[a]*Division of General Pediatrics and Adolescent Medicine, Department of Pediatrics, Johns Hopkins University, Baltimore, Maryland* [b]*Departments of Medicine and Pediatrics, University of North Carolina, Chapel Hill, North Carolina* [c]*Department of Human and Community Development, University of Illinois, Urbana, Illinois* [d]*Center for Adolescent Health Promotion and Disease Prevention, Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland*

Abstract

OBJECTIVES—Male adolescents frequently become disconnected from health care, especially as they get older, which limits physicians' abilities to address their health needs and results in missed opportunities to connect them to the health care system as they enter adulthood. In this study we tested the ability of modifiable (beliefs about masculinity, parental communication, sex education, and health insurance) and nonmodifiable (age, race/ethnicity, and region of residence) factors to prospectively predict health care use by male adolescents.

PATIENTS AND METHODS—We conducted a prospective analysis of data from 1677 male participants aged 15 to 19 years who completed the National Survey of Adolescent Males, a household probability survey conducted throughout the United States in 1988 (wave 1, participation rate: 74%) and in 1990–1991 (wave 2, follow-up rate: 89%). We present percentages and adjusted relative risks of the factors that predict male adolescents' self-report of a physical examination by a regular provider in the past year measured at wave 2.

RESULTS—On average, 1067 (66%) of 1677 male adolescents at wave 2 reported having a physical examination within the last year. Factors associated with a lower likelihood of a physical examination included living in the South, Midwest, and West; being older in age; and holding more traditional masculine beliefs. Factors associated with a higher likelihood of a physical examination included communicating about reproductive health with both parents and being insured. Male adolescents who were sexually active or engaged in ≥2 other risk behaviors had neither a higher nor lower likelihood of a physical examination.

CONCLUSIONS—Efforts to enhance male adolescents' health through health care should include work to modify masculine stereotypes, improve mothers' and fathers' communication about health with their sons, expand health insurance coverage, and identify interventions to connect male adolescents at increased risk for health problems with health care.

Keywords

male; health services accessibility; men's role; parent-child relations

Most causes of adolescent male morbidity and mortality are preventable.[1,2] This is the basis for practice guidelines that recommend clinical preventive services for all adolescents as part of annual or tailored visits.[3-7] Two adolescent clinical preventive services supported by research include that physicians provide reproductive health services (eg, sexually transmitted infection [STI]/HIV screening, counseling, and testing) to male patients between 11 and 21 years of age and age-appropriate immunizations.[3-8] Whether physicians are able to provide preventive health services to adolescent male patients depends on this populations' involvement in the health care system.

Male adolescents frequently become disconnected from health care, especially as they get older.[9,10] A better understanding of modifiable factors that influence adolescent male health care use would improve our ability to develop interventions to increase adolescent male connections to health care. The Andersen's Behavioral Model of Health Services Use has been used to examine factors that influence health care use and proposes that use is influenced by enabling factors that provide resources, predisposing factors that provide motivation, and health needs that provide actual stimulus to engage in care.[11] Previous studies show that enabling factors that represent adolescent barriers to care include lower socioeconomic status, [12] lack of health insurance,[13,14] and lack of a regular source of care,[15] whereas factors that promote adolescent male access to care include the availability of confidential services,[16,17] gender of the provider,[18] assistance with appointment making,[19,20] and school-based health clinics.[9] Predisposing factors associated with the lower use of health care by male adolescents include being older in age,[9] being of minority race/ethnicity,[21] and lacking knowledge/sources of health care information.[22] Few studies have examined how adolescent male health needs[23] and. in particular. needs related to reproductive health, influence their health care use.

Two modifiable factors that may influence adolescent male health care use have been largely ignored in the research literature. First, although parent-teen communication has been shown to be an important contributor to adolescent health, the relationship between parental communication and access to care for sons has received little attention. Second, the way in which men are socialized in the United States (eg, to be tough, competitive, and inexpressive), defined as beliefs about masculinity, has been shown to influence adult men's health care use[24-26] but has not been examined in adolescence.

The National Survey of Adolescent Males (NSAM) provides a unique opportunity to address gaps in our knowledge. The main objective of this prospective study is to test the combined influence of modifiable and non-modifiable factors, organized around Andersen's Behavioral Model of Health Services Use framework, to predict the report of health care use by male adolescents. We also specifically focus on the relationship among beliefs about masculinity, parental communication, and health care use while controlling for other factors.

METHODS

Population and Procedures

Data for these analyses come from the first and second waves of the NSAM. NSAM used an area probability sampling frame based on census data that provides a racially and ethnically representative household sample of noninstitutionalized never-married US male adolescents ages 15 to 19.[27] NSAM wave 1 was conducted in 1988 (response rate: 74%; $N = 1880$). NSAM

wave 2 was conducted 2 years later in 1990–1991 (follow-up rate: 89%; $N = 1677$). Temple University and Brandeis University human subjects review boards approved NSAM procedures. Adult participants provided verbal consent; parental consent and verbal assent was obtained for minors. Survey administration consisted of a 1-hour in-person interview followed by a self-administered paper-and-pencil questionnaire to collect more sensitive information.

Measures of Predictor Variables

Anderson's Behavioral Model of Health Services Use,[11] coupled with variables known to be associated with adolescent male health care use, guided variable selection for this analysis. Unless specified, variables were assessed by self-report at wave 1.

Predisposing Factors

Demographics—Demographics included participant's age and race/ethnicity coded as non-Hispanic white, non-Hispanic black, Hispanic, or other race. Region of residence, measured by census tract information, was coded categorically as Northeast, South, Midwest, or West. Urbanicity, measured by census tract information, was coded categorically as urban or nonurban. Family composition at age 14 years was coded as living in a single- or 2-parent household.

Reproductive Health Information—Parental communication about reproductive health was measured by asking whether participants communicated with parents or people who raised them about any of 6 reproductive health topics (eg, pregnancy, STIs, contraception, HIV/AIDS, menstruation, and what happens if he got a girl pregnant) with responses coded categorically as no communication with parent(s), communication about ≥1 topic with only 1 parent, or communication about ≥1 topic with both parents (together or separately). Hours of sex education ever received in school or an organized program was coded as <5 hours or ≥6 hours.

Attitudes and Beliefs—Beliefs about masculinity were assessed using a 12-item scale that is conceptualized as beliefs in the importance that men adhere to culturally defined standards for male behavior.[28] Scale items were introduced by the question, "How much do you agree or disagree with the following statements?" Item examples included "men are always ready for sex," "it is essential for a guy to get respect from others," and "I could be friends with a gay person." Responses were coded on a 4-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree; Cronbach $\alpha = .67$). For these analyses, using cut points of 1 SD below and above the mean, scale scores were classified as representing less, neutral, and more traditional beliefs about masculinity, respectively.

Enabling Factors

Socioeconomic Status—Mother's education level was measured by highest schooling level completed and coded as an ordered categorical variable. Annual family income was coded as an ordered categorical variable (with $10 000 increments up to $50 000 or more).

Health Insurance—Insurance status during the past 12 months was measured at wave 2 and coded as insured (any type) or uninsured (no insurance).

School Performance—School performance was measured by participants' response to "how well they did in school" with responses coded on a 5-point Likert-type scale ranging from 1 (well below average) to 5 (well above average).

Need Factors

Wave 1 measures for risk of health problems were "have you ever had sex?" and "have you ever had any STI including gonorrhea, syphilis, herpes, warts and HIV/AIDS?" Measure also include sum composite comorbidity risk score developed from responses to involvement in 5 risk behaviors[23]: "Have you ever drunk alcohol?"; "…used tobacco?"; "…used cocaine?"; "…been picked up by the police for doing something wrong?"; and "…tricked or forced someone to have sex?" This score was coded categorically on the basis of responses indicating involvement in 0 to 1 vs ≥2 risk behaviors. At wave 2, participants were also asked "have you had a serious illness or injury since the last interview?"

Measure of Outcome Variable

Health care use was measured by response to, "When was the last time you saw your regular care provider for a physical examination?" with responses coded as >12 months or ≤12 months.

Analysis

The University of Maryland's human subjects review board provided approval to perform secondary data analysis. Data were prepared and analyzed using SPSS 12.0 (SPSS Inc, Chicago, IL) and Stata 9.0 (Stata Corp, College Station, TX), respectively. Descriptive analyses reported for the full sample are weighted. Sample weights were calculated as the product of the basic sampling rate that takes into account sampling framework, screening nonresponse rate, interview nonresponse rate, and attrition.[27,29]

Unweighted univariate logistic regression analyses were first conducted to examine relationships between predictor variables and health care use. A P value of <.10 determined variables to include in the final model. Two nonsignificant yet conceptually important health needs (eg, sexual activity and engaging in other high-risk behaviors) were included in the final model, because male adolescents involved in these behaviors are at risk for experiencing negative health outcomes.

Next, the final set of covariates was assessed for multicollinearity, and none was found. Unweighted multivariate analyses were then performed. A Poisson model was applied in the multivariate analyses to calculate the relative risk (RR),[30] because odds ratios overestimate RR when main outcomes are common (>10%) and, thus, lead to inaccurate estimates of health care use.[31] All of the predictor variables were entered simultaneously into the regression model to produce adjusted incidence rate ratios.[30] Thus, RR represents the association of each predictor variable with the dependent variable after accounting for the influence of all of the other variables.

Missing Data

For multivariate analyses, participants who had missing data for mother's education ($n = 170$ [10%]) and family income ($n = 104$ [6.2%]) were replaced with the sample's mean for that variable. Dummy variables were created for each of these variables to represent missing data and were included in the final model.[32] Multivariate analyses were performed with and without mean replacement for missing data, and findings were not significantly different; because 10% of participants had missing data for mother's education, multivariate analyses presented here use mean replacement.

RESULTS

Participants

Participants had a mean (±SD) age of 16.9 (±1.4) years and were predominantly non-Hispanic white (73.2%). Approximately one third lived in the South, two thirds in urban settings, and one fifth in single-parent households. Approximately three quarters communicated about reproductive health with 1 or both parents, and approximately half reported they had received ≥6 hours of sex education in school or an organized program. The participant mean (±SD) beliefs about masculinity score was 2.6 (±0.4); that is, on average, male adolescents had neutral masculine beliefs (Table 1).

Participants' mean (±SD) mother's education level was 12.9 (±2.6) years. There was equal representation from all of the family income levels. During the 12 months preceding the second interview, 85.4% of participants were insured. Behaviors associated with health needs were reported by many: 59.6% ever had sex, 3.6% ever had an STI, 16.3% had a serious illness or injury, and 20.3% engaged in ≥2 risk behaviors (Table 2).

Predictors of Health Care Use: Bivariate Analyses

Approximately two thirds of the participants (66%) reported that the last time they saw their regular care provider for a physical examination was within the last year (Table 1).

Predisposing Factors and Health Care—Bivariate analyses revealed that male adolescents who were less likely to have a physical examination in the past year were Hispanic versus non-Hispanic white (53.8% vs 68.6%; Table 1); lived in the South (60.9%) and West (63.8%) versus Northeast (74.4%); lived in the South versus Midwest (60.9% vs 69.8%); were age 19 vs 15 (62.1% vs 72.3%); lived in single-parent versus 2-parent households (55.9% vs 68.9%); and held more traditional masculine beliefs (51.3%) versus neutral (66.9%) or less traditional beliefs (68.8%). Male adolescents who communicated about reproductive health with both parents (73.7%) were more likely to have a physical examination than male adolescents who had no communication with either parent (55.6%) or who communicated with only 1 parent (59.8%).

Enabling Factors and Health Care—Bivariate analyses revealed that male adolescents who were more likely to have a physical examination in the past year had mothers with higher educational versus mothers with lower educational levels; were from higher versus lower income families; and were insured versus uninsured (Table 2).

Need Factors and Health Care—Male adolescents who were sexually active or engaged in ≥2 risk behaviors were neither more nor less likely to have a physical examination than male adolescents who were not sexually active or engaged in less risk behavior (Table 2).

Predictors of Health Care Use: Multivariate Analyses

Multivariate analyses showed that region of residence, age, parental communication about reproductive health, beliefs about masculinity, and insurance prospectively predicted having a visit to a regular care provider for a physical examination in the last year while controlling for all other factors (Table 3). Male adolescents who were less likely to have a physical examination in the past year lived in the South, Midwest, and West versus Northeast (RR [95% confidence interval (CI)]: 0.81 [0.74–0.89], 0.89 [0.80–0.98], and 0.87 [0.77–0.97], respectively); were age 19 vs 15 years (0.86 [0.75–0.98]); and held more traditional masculine beliefs versus neutral beliefs (0.86 [0.77–0.96]). Male adolescents who were more likely to have a physical examination within the past year communicated about reproductive health with both parents versus no communication with either parent (1.14 [1.04–1.26]) and were insured

versus uninsured (1.62 [1.40–1.87]). The other significant bivariate relationships did not persist in multivariate analyses.

Exploratory Analysis: Parent Communication According to Age, Family Composition, and Beliefs About Masculinity

We conducted an exploratory posthoc analysis to determine whether the impact of different sources of parental communication on health care use varied according to age, family composition, and beliefs about masculinity while controlling for factors described in the previous multivariate analysis. For these analyses we ran separate multivariate models stratified by age (15–17 and 18–19 years), family composition (single- and 2-parent households), and masculine beliefs (less traditional, neutral, and more traditional).

Sources of parental communication on health care use were found to vary by age, family composition, and masculine beliefs (Table 4). Analyses by age found that communication about reproductive health with both parents predicted increased health care use in the last year for younger and older male adolescents, although the importance of talking with both parents together varied by age. Analyses by family composition found that, among male adolescents who live in 2-parent households, those who communicate with both parents separately are more likely to have a physical examination than male adolescents who do not communicate with either parent (1.15 [1.01–1.30]). Parental communication did not influence the use of health care among male adolescents in single-parent households. Analyses by masculine beliefs found that, among male adolescents with more traditional beliefs, those who communicated with their father only or both parents together were more likely to have a physical examination than male adolescents who did not communicate with either parent (RR [95% CI]: 1.61 [1.13–2.29] and 1.55 [1.09–2.20], respectively). As shown in Table 4, a nearly identical pattern was found for male adolescents with less traditional masculine beliefs.

DISCUSSION

Three modifiable factors (masculine beliefs, parent-teen communication, and insurance status) prospectively influence health care use among male adolescents in the United States. These findings can be used to inform interventions to improve adolescent male health through increased use of health care.

To our knowledge, this is the first report linking adolescents' beliefs about masculinity and male roles to health care use behaviors. Our findings that male adolescents with more traditional masculine beliefs are less likely to get health care is consistent with research focused on adult men.[26] Our findings demonstrate that such attitudes may hinder adolescent male use of health care and may be consistent with Courtenay's[33] suggestion that boys' lack of help seeking can itself be considered a risk behavior. Within this context, additional research is needed to better understand how masculine beliefs influence adolescent male care-seeking behaviors. Programs that promote health and gender equity among boys are currently under evaluation.[34,35] These programs are designed, in part, to target mythology that suggests that care-seeking is a sign of weakness and to promote the belief that care seeking can be consistent with the male role and seen as a sign of strength. An alternative strategy that warrants investigation among male youth populations may be to promote health and target services in a manner that is more congruent with traditional male gender roles.[36,37]

Parent-teen communication has long been accepted as an important contributor to adolescent health.[22,38,39] Studies that examine parent-teen communication about sex have reported gender-specific issues (that mothers are more likely than fathers to talk with their children about sex and that mothers talk more to daughters than to sons).[40,41] Also, the influence of mothers has been shown to outweigh that of fathers as it relates to the sexual behaviors of their

teenage sons and daughters.[38] Our findings provide new insight into the relationship between parent-son communication about reproductive health and health care use and highlight the unique importance of father-son communication. In this study, communication with both mothers and fathers predicted increased health care use for male adolescents regardless of age and for sons with either more or less traditional masculine beliefs. For adolescent sons with either more or less traditional beliefs, talking with fathers about reproductive health issues seems to be particularly important. Isolated mother-son communication did not predict health care use in our study. Future research is needed to examine the content and quality of parent-son communication as it relates to male use of health care and to further explore parental communication within the context of single-parent households.

Consistent with existing literature, insurance plays a major role in whether male adolescents get health care. The proportion of male adolescents in our study who reported that they were uninsured (14.6%) is similar to that of more recent national samples (F. L. Sonenstein, PhD, written communication, 2006 [data from the National Survey of Family Growth]).[13] Newacheck et al[13] recently reported that adolescents who reside in regions outside the Northeast are more likely to be uninsured. Our study shows that regional variation in health care use persists after controlling for insurance status. Strategies to reduce adolescent male barriers to care may, thus, include extending insurance coverage to all adolescents and young adults, developing equitable insurance plans for male adolescents and young adults that are comparable to reproductive health care services available for female adolescents and young adults (eg, family planning) and improving access to care in all of the US regions.

It is important to highlight that male adolescents who are at higher risk of health problems on the basis of reported risk-related behaviors (eg, sexual intercourse, substance use, and truancy) are equally likely to have a physical examination in the last year when compared with lower-risk adolescents after controlling for serious illness or injury. This is unfortunate, because male adolescents engaging in risk-related behaviors may benefit the most from connections to the health care system. Strategies to identify and connect this population to care are needed and may involve collaboration with allied professionals (eg, teachers, counselors, and community leaders) and the juvenile justice system.[23,42] These strategies will need to be linked to efforts to support physicians' delivery of high-quality adolescent clinical preventive services, such as STI/HIV testing and age-appropriate immunizations.[43-45]

A major strength of this study is its prospective nature and the use of a racially and ethnically diverse national sample. This study also has several potential limitations. First, self-report measures have inherent limitations, although adolescent reports of their own health care behaviors are probably at least as accurate as those of parental report. Second, there are limitations with our main outcome variable. We are unable to determine the reason that respondents had a physical examination by their regular care provider, so we cannot distinguish acute from routine visits. Furthermore, we are unable to independently test the influence of having a regular source of care on health care use, because these variables were linked in the original survey instrument. This combined measure does decrease the risk of overestimation of adolescent male health care, because it described examinations linked to a regular source of care from examinations provided in group settings as part of sports clearance events.[46] Third, bias based on attrition between waves is possible. The risk for bias is expected to be small, because previous analyses have shown no attrition bias in the areas of sexual or contraceptive behaviors[47] or in any of the other the main study variables except for age (older boys were less likely to follow-up at wave 2; $P < .04$). Next, the internal reliability of the masculine beliefs scale is somewhat lower than that traditionally found for scales used in behavioral research. Although this scale may not fully capture masculine beliefs, it is able to prospectively differentiate adolescent male health care use, thus demonstrating construct validity. Finally, NSAM is an older data set, but we believe our findings are still relevant given the expected

stability of our main study predictor and outcome variables. NSAM remains a seminal prospective data set to examine adolescent male reproductive health. This data set provides us a unique opportunity to examine prospectively whether modifiable factors, including masculine beliefs and parental communication, within the context of an organized framework are related to adolescent male health care use.

CONCLUSIONS

Our study suggests that efforts to enhance adolescent male health through health care should include work to modify masculine stereotypes, increase mothers' and fathers' communication about health with their sons, and expand health insurance coverage. Specific efforts to connect male adolescents at high risk of health problems to health care are needed. Primary care providers should encourage mothers and fathers to talk with their sons about general and reproductive health and the importance of connections with health services. Whether establishing better connections between male adolescents and health care can subsequently lead to better connections between adult men and health care (and improved men's health) is an important area of future longitudinal research.

References

1. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance: United State,2003; MMWR Morb Mortal Wkly Rep. 2004 [January 1, 2006]. p. 1-29.Available at: www.cdc.gov/HealthyYouth/yrbs/publications.htm

2. National Adolescent Health Information Center. A Health Profile of Adolescent and Young Adult Males. San Francisco, CA: University of California; 2005.

3. Elster, A.; Kuzsets, N. Guidelines for Adolescent Preventive Services (GAPS). Baltimore, MD: Williams & Wilkins; 1993.

4. American Academy of Pediatrics, Committee on Psychosocial Aspects of Child and Family Health. Guidelines for Health Supervision III. Elk Grove Village, IL: American Academy of Pediatrics; 1997.

5. Green, M.; Palfrey, JS., editors. Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents. 2. Arlington, VA: National Center for Education in Maternal and Child Health; 2002. revised

6. American Academy of Family Physicians. Summary of Recommendations for Clinical Preventive Services. Leawood, KS: American Academy of Family Physicians; 2005 [January 1, 2006]. Revision 6.0Available at: www.aafp.org/exam.xml

7. Guide to Clinical Preventive Services, 2005: Recommendations of the U.S. Preventive Services Task Force. Rockville, MD: Agency for Healthcare Research and Quality; 2005 [January 1, 2006]. AHRQ Publication No. 05-0570. Available at: www.ahrq.gov/clinic/pocketgd05

8. Miller WC, Ford CA, Morris M, et al. Prevalence of chlamydial and gonococcal infections among young adults in the United States. JAMA 2004;291:2229–2236. [PubMed: 15138245]

9. Marcell AV, Klein JD, Fischer I, Allan MJ, Kokotailo PK. Male adolescent use of health care services: where are the boys? J Adolesc Health 2002;30:35–43. [PubMed: 11755799]

10. Ziv A, Boulet JR, Slap GB. Utilization of physician offices by adolescents in the United States. Pediatrics 1999;104:35–42. [PubMed: 10390257]

11. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? J Health Soc Behav 1995;36:1–10. [PubMed: 7738325]

12. Newacheck PW, Hung YY, Park MJ, Brindis CD, Irwin CE Jr. Disparities in adolescent health and health care: does socioeconomic status matter? Health Serv Res 2003;38:1235–1252. [PubMed: 14596388]

13. Newacheck PW, Park MJ, Brindis CD, Biehl M, Irwin CE Jr. Trends in private and public health insurance for adolescents. JAMA 2004;291:1231–1237. [PubMed: 15010445]

14. Callahan ST, Cooper WO. Uninsurance and health care access among young adults in the United States. Pediatrics 2005;116:88–95. [PubMed: 15995037]

15. Bartman BA, Moy E, D'Angelo LJ. Access to ambulatory care for adolescents: the role of a usual source of care. J Health Care Poor Underserved 1997;8:214–226. [PubMed: 9114629]

16. Ford CA, Millstein SG, Halpern-Felsher BL, Irwin CE Jr. Influence of physician confidentiality assurances on adolescents' willingness to disclose information and seek future health care: a randomized controlled trial. JAMA 1997;278:1029–1034. [PubMed: 9307357]

17. Ginsburg KR, Slap GB, Cnaan A, Forke CM, Balsley CM, Rouselle DM. Adolescents' perceptions of factors affecting their decisions to seek health care. JAMA 1995;273:1913–1918. [PubMed: 7783300]

18. Kapphahn CJ, Wilson KM, Klein JD. Adolescent girls' and boys' preferences for provider gender and confidentiality in their health care. J Adolesc Health 1999;25:131–142. [PubMed: 10447040]

19. Norcross WA, Ramirez C, Palinkas LA. The influence of women on the health care-seeking behavior of men. J Fam Pract 1996;43:475–480. [PubMed: 8917147]

20. Raine T, Marcell AV, Rocca CH, Harper CC. The other half of the equation: Serving young men in a young women's reproductive health clinic. Perspect Sex Reprod Health 2003;35:208–214. [PubMed: 14668023]

21. Lieu TA, Newacheck PW, McManus MA. Race, ethnicity, and access to ambulatory care among US adolescents. Am J Public Health 1993;83:960–965. [PubMed: 8328617]

22. Ackard DM, Neumark-Sztainer D. Health care information sources for adolescents: age and gender differences on use, concerns, and needs. J Adolesc Health 2001;29:170–176. [PubMed: 11524215]

23. Lindberg, LD.; Boggess, S.; Porter, L.; Williams, S. Teen Risk-Taking: A Statistical Portrait. Washington, DC: Urban Institute; 2000.

24. Courtenay WH. Constructions of masculinity and their influence on men's well-being: a theory of gender and health. Soc Sci Med 2000;50:1385–1401. [PubMed: 10741575]

25. Addis ME, Mahalik JR. Men, masculinity, and the contexts of help seeking. Am Psychol 2003;58:5–14. [PubMed: 12674814]

26. Sandman, D.; Simantov, E.; An, C. Out of Touch: American Men and the Health Care System. Commonwealth Fund Men's and Women's Health Survey Findings. New York, NY: Commonwealth Fund; 2001.

27. Ku, L.; Williams, S.; Lindberg, LD.; Pernas, M.; Martinez, G. Documenting the Public-use Data Set for the Old Cohort of the 1995 National Survey of Adolescent Males. Washington, DC: Urban Institute; 1999.

28. Pleck, JH. The gender role strain paradigm: an update. In: Levant, RF.; Pollack, WS., editors. A New Psychology of Men. New York, NY: Basic Books; 1995. p. 11-32.

29. Bureau of the Census. Marital Status and Living Arrangements: March 1987. Washington, DC: US Department of Commerce, Bureau of the Census; 1988. Current Population Reports, series P-20, No 423

30. Barros AJ, Hirakata VN. Alternatives for logistic regression in cross-sectional studies: an empirical comparison of models that directly estimate the prevalence ratio. BMC Med Res Methodol 2003;3:21. [PubMed: 14567763]

31. Zhang J, Yu KF. What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. JAMA 1998;280:1690–1691. [PubMed: 9832001]

32. Cohen, J.; Cohen, P. Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences. 2. Mahwah, NJ: Lawrence Erlbaum Associates; 1983.

33. Courtenay WH. Better to die than cry? A longitudinal and constructionist study of masculinity and the health risk behavior of young American men. Dissert Abstract Intern 1998;59(08A)9902042

34. Barker, GT. Dying to be Men: Youth, Masculinity and Social Exclusion. London, United Kingdom: Routledge, Taylor & Francis Group; 2005.

35. Horizons. Promoting Healthy Relationships and HIV/STI Prevention for Young Men: Positive Findings From an Intervention Study in Brazil—Research Update. Washington, DC: Horizons Program/Population Council; 2004 [January 1, 2006]. Available at: www.popcouncil.org/horizons/pubsarea/pubsprevbc.html

36. Robertson JM, Fitzgerald LF. Overcoming the masculine mystique: preferences for alternative forms of assistance among men who avoid counseling. J Couns Psychol 1992;39:240–246.

37. Rochlen AB, Whilde MR, Hoyer WD. The real men: real depression campaign—overview, theoretical implications, and research considerations. Psychol Men Masc 2005;6:186–194.

38. Blum, RW. Mother's Influence on Teen Sex: Connections That Promote Postponing Sexual Intercourse. Minneapolis, MN: Center for Adolescent Health, University of Minnesota; 2002.

39. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm. Findings from the National Longitudinal Study on Adolescent Health. JAMA 1997;278:823–832. [PubMed: 9293990]

40. DiIorio C, Resnicow K, Dudley WN, et al. Social cognitive factors associated with mother-adolescent communication about sex. J Health Commun 2000;5:41–51. [PubMed: 10848031]

41. DiIorio C, Kelley M, Hockenberry-Eaton M. Communication about sexual issues: mothers, fathers, and friends. J Adolesc Health Mar 1999;24:181–189.

42. Forrest CB, Tambor E, Riley AW, Ensminger ME, Starfield B. The health profile of incarcerated male youths. Pediatrics 2000;105:286–291. [PubMed: 10617737]

43. Porter LE, Ku L. Use of reproductive health services among young men, 1995. J Adolesc Health 2000;27:186–194. [PubMed: 10960217]

44. Igra V, Millstein SG. Current status and approaches to improving preventive services for adolescents. JAMA 1993;269:1408–1412. [PubMed: 8441217]

45. Blum RW, Bearinger LH. Knowledge and attitudes of health professionals toward adolescent health care. J Adolesc Health Care 1990;11:289–294. [PubMed: 2365602]

46. Krowchuk DP, Krowchuk HV, Hunter DM, et al. Parents' knowledge of the purposes and content of preparticipation physical examinations. Arch Pediatr Adolesc Med 1995;149:653–657. [PubMed: 7767421]

47. Pleck JH, Sonenstein FL, Ku L. Changes in adolescent males' use of and attitudes toward condoms, 1988–1991. Fam Plann Perspect 1993;25:106–110. 117. [PubMed: 8354374]

Abbreviations

STI
sexually transmitted infection

NSAM
National Survey of Adolescent Males

RR
relative risk

CI

confidence interval

TABLE 1

Percentage of Male Subjects Reporting Physical Examination in Past Year by Predisposing Factors (*N*=1677)

Variables	Total		Physical Examination in Past Year, %[b]	P
	N^a	$\%^b$		
Health care use				
Last physical examination by regular care provider				
≥12 mo	602	33.8	—	—
≤12 mo	1067	66.0	—	—
Lost to follow-up	211	—	—	—
Overall	1677	100	66.1	—
Predisposing factors				
Demographics				
Race/Ethnicity				
Non-Hispanic white	675	73.2	68.6 (ref)	—
Non-Hispanic black	608	14.5	62.8	.596
Hispanic	340	9.3	53.8	.007
Other race	54	3.0	60.0	.287
Region of residence				
Northeast	287	19.0	74.4 (ref)	—
South	798	37.4	60.9	<.001
Midwest	308	23.7	69.8[c]	.101
West	284	19.9	63.8	.007
Urbanicity				
Nonurban	527	35.5	66.6 (ref)	—
Urban	1150	64.5	65.3	.638
Age, y				
15	362	20.1	72.3 (ref)	—
16	359	19.6	70.1	.412
17	371	21.8	65.7	.168
18	345	23.4	60.7	.066
19	239	15.1	62.1	.009
Family composition at age 14				
Single-parent household	466	20.8	55.9 (ref)	—
2-parent household	1209	79.1	68.9	.015
Reproductive health information				
Parental communication about reproductive health				
No communication	398	22.0	55.6 (ref)	—
Communication with only 1 parent	543	26.3	59.8	.360
Communication with both parents	728	51.4	73.7[d]	<.001
Hours of sex education				
≤5	607	44.5	61.7 (ref)	—
≥6	1070	53.3	69.4	.052
Attitudes and beliefs				
Beliefs about masculinity				
Less traditional beliefs	372	22.2	68.8	.981
Neutral beliefs	1104	65.9	66.9 (ref)	—
More traditional beliefs	197	11.8	51.3[e]	<.001

— indicates not applicable; ref, reference.

[a]Data are unweighted.

[b]Data are weighted.

[c]Data show a significant difference between Midwest and South (*P*<.05).

[d]Data show a significant difference between communication with both and 1 parent (*P*<.05).

[e]Data show a significant difference between male subjects with more and less traditional beliefs.

TABLE 2

Percentage of Male Subjects Reporting Physical Examination in Past Year by Enabling and Need Factors (*N*=1677)

Variables	Total		Physical Examination in Past Year, %[b]	P
	N^a	%[b]		
Enabling factors				
Mother's education level				
≤11th grade	384	14.7	55.7	
High school diploma or GED	668	42.5	69.3	
College or more	455	36.2	68.6[c]	.005
Missing	170	6.6	—	
Annual family income, $				
<10 000	202	6.5	58.2	
10 000–20 000	381	15.6	53.8	
20 000–30 000	320	18.2	67.9	
30 000–40 000	275	17.3	67.5	
40 000–50 000	162	13.3	73.1	
50 000–60 000	84	8.0	80.6	
>60 000	149	16.4	69.1[c]	<.001
Missing	104	4.7	—	
Health insurance				
No	307	14.6	33.9 (ref)	—
Yes	1368	85.4	71.7	<.001
School performance				
Well below and below average	166	8.0	48.1	.214
Average	840	43.5	67.0 (ref)	—
Above and well above average	665	48.0	68.0	.218
Need factors				
Serious illness or injury				
No	1387	83.7	66.3 (ref)	—
Yes	289	16.3	65.2	.013
Ever had sex				
No	552	40.2	69.2 (ref)	—
Yes	1121	59.6	63.9	.200
Ever had any STI				
No	1496	92.7	66.1 (ref)	—
Yes	104	3.6	66.1	.568
Comorbidity of risk behaviors[d]				
≤ 1	1346	78.0	67.9	—
≥ 2	293	20.3	60.1	.134

GED indicates general equivalency diploma; ref, reference; —, not applicable.

[a]Data are unweighted.

[b]Data are weighted.

[c]Bivariate analysis was performed with predictor in the form of a continuous variable.

[d]Data are the sum of involvement in risk behaviors, including ever used alcohol last year, tobacco use last year, cocaine use, ever picked up by police, and ever forced someone to have sex.

TABLE 3

Unadjusted Odds Ratio and Adjusted RR for Predictors of Adolescent Male Health Care Use in the Past Year

Predictors	Bivariate Analysis[a]			Multivariate Analysis[b]		
	OR	95% CI	P	RR[c]	95% CI	P
Predisposing factors						
Race/ethnicity (reference=non-Hispanic white)						
Non-Hispanic black	0.94	(0.75–1.18)	.596	1.05	(0.96–1.15)	.283
Hispanic	0.69	(0.53–0.91)	.007	0.95	(0.85–1.06)	.326
Other race	0.74	(0.42–1.30)	.287	0.99	(0.78–1.25)	.910
Region of residence (reference=Northeast)						
South	0.56	(0.42–0.75)	<.001	0.81	(0.74–0.89)	<.001
Midwest	0.74	(0.52–1.06)	.101	0.89	(0.80–0.98)	.024
West	0.61	(0.43–0.87)	.007	0.87	(0.77–0.97)	.015
Age (reference=15), y						
16	0.88	(0.64–1.20)	.412	0.97	(0.88–1.07)	.538
17	0.81	(0.59–1.10)	.168	0.95	(0.86–1.06)	.344
18	0.75	(0.55–1.02)	.066	0.91	(0.82–1.02)	.099
19	0.63	(0.45–0.89)	.009	0.86	(0.75–0.98)	.021
Family composition (reference=single-parent household)						
2-parent household	1.32	(1.06–1.64)	.015	1.05	(0.96–1.15)	.325
Parental communication about reproductive health (reference=no communication)						
Communication with 1 parent	1.13	(0.87–1.47)	.360	1.06	(0.95–1.18)	.323
Communication with both parents	1.73	(1.34–2.24)	<.001	1.14	(1.04–1.26)	.008
Beliefs about masculinity						
Less traditional beliefs	1.00	(0.75–1.31)	.981	1.00	(0.91–1.10)	.922
Neutral beliefs, reference						
More traditional beliefs	0.62	(0.48–0.81)	<.001	0.86	(0.77–0.96)	.009
Enabling factors						
Mother's education level (continuous)[d]	1.06	(1.02–1.10)	.005	0.99	(0.98–1.01)	.416
Annual family income (continuous)[e]	1.12	(1.06–1.19)	<.001	1.01	(0.99–1.04)	.259
Health insurance (reference=no)	3.21	(2.49–4.15)	<.001	1.62	(1.40–1.87)	<.001
Need factors						
Serious illness or injury (reference=no)	1.42	(1.08–1.87)	.013	1.13	(1.04–1.23)	.006
Ever had sex (reference=no)	0.87	(0.70–1.08)	.200	1.01	(0.93–1.10)	.788
Comorbidity of risk behaviors (reference= ≤1)						
≥2	0.82	(0.63–1.06)	.134	0.99	(0.89–1.10)	.847

OR indicates odds ratio.

[a] Data from univariate logistic regression models.

[b] Data from Poisson regression, log pseudolikelihood=−1471.61; pseudo R2=.018; N=1617.

[c] Data are adjusted RRs and 95% confidence intervals representing relationship between independent variable and physical examination in the past year while controlling for all other independent variables in this table.

[d] Missing data (n=170) were replaced using sample mean and dummy for missings included in final model (P not significant).

[e] Missing data (n=104) were replaced using sample mean and dummy for missings included in final model (P not significant).

TABLE 4

Exploring the Relationship Between Parental Communication and Health Care Use in the Past Year According to Age, Family Composition, and Beliefs About Masculinity

Parental Communication About Reproductive Health Variable[a]	Communication With Mother Only			Communication With Father Only			Communication With Both Parents, Separately			Communication With Both Parents, Together		
	RR	95% CI	P	RR	95% CI	P	RR	95% CI	P	RR	95% CI	P
All	1.03	0.91–1.16	.652	1.15	0.99–1.32	.068	1.15	1.03–1.29	.017	1.14	1.03–1.28	.014
Age												
Younger	1.05	0.88–1.25	.576	1.15	0.94–1.42	.166	1.11	0.94–1.32	.228	1.20	1.03–1.39	.022
Older	1.02	0.87–1.19	.835	1.12	0.91–1.39	.291	1.17	1.01–1.35	.043	1.10	0.94–1.28	.225
Family composition												
Single-parent household	1.14	0.93–1.40	.205	1.24	0.93–1.67	.149	1.14	0.89–1.46	.309	1.19	0.90–1.56	.217
2-parent household	0.96	0.82–1.11	.557	1.11	0.94–1.32	.205	1.15	1.01–1.30	.033	1.12	1.00–1.26	.061
Beliefs about masculinity												
Less traditional beliefs	1.11	0.80–1.54	.527	1.53	1.07–2.20	.020	1.21	0.90–1.63	.203	1.35	1.02–1.79	.037
Neutral beliefs	0.98	0.86–1.13	.807	0.98	0.82–1.18	.850	1.09	0.96–1.24	.176	1.07	0.94–1.21	.294
More traditional beliefs	1.26	0.89–1.78	.193	1.61	1.13–2.29	.009	1.36	0.93–2.00	.115	1.55	1.09–2.20	.014

The data were controlled for all other factors in Table 3.

[a]Reference is no communication.