

Associations Between Sexual and Reproductive Health Communication and Health Service Use Among U.S. Adolescent Women

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CONTEXT: An understanding of the association between adolescents' sexual and reproductive health knowledge and their use of relevant services is needed to improve young people's sexual and reproductive health.

METHODS: Data from the National Survey of Family Growth were used to examine associations between sexual and reproductive health communication (parental and formal) and service use among 2,326 U.S. women aged 15–19 in 2002 and 2006–2008. Chi-square tests and multivariate logistic regression were used to assess relationships between adolescents' receipt of sexual and reproductive health communication from parents and formal (school, church, community) sources and their use of sexual and reproductive health services.

RESULTS: The majority of adolescents had received parental (75%) and formal (92%) sexual and reproductive health communication; 43% reported recent service use. In unadjusted analyses, parental and formal communication were positively associated with service use. In regression models, overall parental communication remained positively associated with service use (odds ratio, 1.6); parental abstinence-only communication, which was not significant in 2002, was associated with reduced odds of service use for the pooled sample (0.4) and in 2006–2008 (0.3). Formal communication was not associated with service use.

CONCLUSIONS: Further research is needed to assess whether comprehensive sexual and reproductive health communication facilitates adolescents' health care utilization. Examination of how communication sources, quality and content are related to service use is needed to understand adolescents' sexual and reproductive health knowledge and needs.

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Poor sexual and reproductive health outcomes, which are more prevalent among adolescent women in the United States than in other developed countries,¹ may be partially attributed to a lack of sexual and reproductive health care.^{2–6} Increased family planning and reproductive service use by U.S. women from 1995 to 2002^{4,5} coincided with improved reproductive health outcomes.³ Increases in contraceptive use, reductions in adolescent pregnancies, a long-term decline in induced abortion rates and increases in STD screening during this time occurred in tandem with rising rates of contraceptive provision and counseling and STD treatment.³ However, between 2002 and 2006–2008, declining proportions of U.S. adolescents used sexual and reproductive health services.⁷

In earlier work, we have found disparities and needs in sexual and reproductive health service use across certain social and demographic groups.^{4,7} A better understanding of links between service use and cognitive and behavioral characteristics, which are potentially modifiable, may aid the development of targeted strategies to improve health care-seeking among all adolescents.^{8–10}

Adolescents learn about sex most commonly from their parents and formal sources, such as schools, churches or community centers.^{11–19} Accurate information helps adolescents understand their reproductive health needs;

it also encourages healthy sexual decision making and behaviors, including postponing first intercourse, increasing condom and contraceptive use, and reducing the number of partners.^{11–19} Whether receipt of communication from these sources or the content of communication is associated with sexual and reproductive health service use is not known.

In prior analyses, we examined trends in sexual and reproductive health service use and communication among U.S. adolescents from 2002 to 2006–2008.^{7,20,21} The study described here built on that work by examining associations between receipt of such communication and use of services among this population. It also investigated changes in associations between sexual and reproductive health communication and service use over time.

METHODS

Data

This study used data from the National Survey of Family Growth (NSFG),^{22,23} which collects information from nationally representative samples of U.S. women and men aged 15–44. In 2002, a total of 12,571 cross-sectional, in-person, household interviews were conducted; 13,495 interviews were conducted on an ongoing basis between 2006 and 2008. Black and Hispanic women and men were

oversampled. The response rate was 79% in 2002 and 75% in 2006–2008.

Our sample was restricted to the 2,531 females aged 15–19 who participated in the surveys. We excluded adolescents who were pregnant or who had received prenatal or postpartum care in the previous year, as we anticipated they would have different communication and service use needs than the general population. Our final sample comprised 2,326 adolescent women—1,065 from 2002 and 1,261 from 2006–2008. The institutional review board of Princeton University approved this study.

To assess receipt of parental communication about sexual and reproductive health, we asked adolescents whether they had ever talked with a parent about contraceptive methods, where to get contraceptives, how to use a condom, STDs and how to say no to sex (abstinence).^{*} If adolescents reported having talked with a parent about one or more of these topics, we categorized them as having received parental communication. If they reported having talked only about how to say no to sex, we categorized them as having received parental abstinence-only communication.

Participants also were asked whether they had ever received formal instruction, at school, church, a community center or another place, on contraceptive methods and how to say no to sex. The NSFG did not ascertain details on the source, quality or content of the communication received. We categorized adolescents as having received formal communication if they reported having had instruction on either or both topics. If they had received formal instruction only on how to say no to sex, we categorized them as having received formal abstinence-only communication. They were deemed to have received formal comprehensive communication if they had received such communication on contraception and abstinence. Fewer than 4% of the sample had received communication on contraception but not abstinence; we included them in the overall analysis, but did not categorize them separately.

To assess service use, we asked adolescents whether they had visited a medical provider for any sexual or reproductive health care within the 12 months preceding the survey and how many visits they had made. They were further asked whether they had received specific contraceptive services (method provision, evaluation or checkup, and counseling for the provision of a routine or emergency contraceptive) and other gynecologic care (Pap smear, pelvic exam, STD testing or treatment, pregnancy testing and abortion). If adolescents reported one or more such visits within the last year, we considered them to have used recent sexual and reproductive health services.

Analyses

We began our analysis with descriptive statistics to estimate receipt of sexual and reproductive health communication and service use among the pooled sample of adolescents participating in the two surveys. We

conducted chi-square tests to compare types of services used between adolescents who had received and who had not received parental and formal sexual and reproductive health communication. We also compared types of communication received between adolescents who had used and who had not used services.

Multivariate logistic regression modeling allowed us to estimate relationships between parental and formal sexual and reproductive health communication and service use overall, for 2002, for 2006–2008 and among sexually experienced adolescents, while adjusting for confounders. Covariates were evaluated for inclusion in regression models if their *p* value in univariate models was .25 or less. In the final multivariate regression models, we retained only those covariates that were significantly associated with the outcome (*p* < .05) or that significantly changed point estimates of other key variables (e.g., survey year). We created separate multivariate models for parental communication and formal communication, as well as models combining the two. Point estimates were consistent for all variables in separate and combined models; thus, the final reduced models we present include both parental and formal communication.

Finally, we tested for trends in service use over time and changes in associations between sexual and reproductive health communication and service use using interaction terms for survey year when necessary.

Weighted data were used to account for the complex, stratified sampling survey design. We computed standard errors and tests of significance using the *svy* series of commands in Stata 11.0.

RESULTS

The mean age of the participants was 17 years (standard deviation, 1.4); 61% were aged 15–17, and 39% were aged 18–19 (Table 1, page 8). Fifty-five percent identified themselves as non-Hispanic white, 19% as black, 20% as Hispanic and 6% as members of other racial or ethnic groups. Seventy-five percent were in high school, while 10% reported having any college education. More resided in urban areas (43%) than in suburban (38%) or rural (19%) areas, and 91% were born in the United States. Fifty-three percent of the sample reported incomes below 200% of the federal poverty line; four in 10 were employed, while one-third reported being in school, and one-fifth responded “other.” Sixteen percent had been uninsured at some point during the past year. One-third of the sample reported participating in religious services weekly or more, and half reported having had an intact childhood family situation (having lived with two parents, whether biological or adoptive, as a child). The average age at menarche was 12.3 years (standard deviation, 1.4—not shown). Fewer than half reported ever having had vaginal intercourse; 25% reported one sexual partner in

^{*}In 2006–2008, adolescents were asked about communication regarding HIV.

TABLE 1. Percentage of U.S. women aged 15–19, by selected characteristics, according to whether they used sexual and reproductive health services, 2002 and 2006–2008 National Survey of Family Growth

Characteristic	Total (N=2,326)	Used (N=998)	Did not use (N=1,328)
DEMOGRAPHIC AND SOCIAL			
Age-group			
15–17	61	46	72***
18–19	39	54	28
Race and ethnicity			
Hispanic	20	17	23**
White	55	58	53
Black	19	20	18
Other	6	5	6
Education			
<high school	8	11	5***
In high school	75	63	85
Completed high school	7	11	4
Any college	10	15	6
Residence			
Urban	43	44	42
Suburban	38	36	40
Rural	19	21	18
Foreign-born			
	9	7	10**
<200% of poverty level			
	53	52	55*
Employment status			
Employed	40	49	32***
Unemployed	5	6	4
In school	34	26	41
Other	21	18	23
Uninsured in last 12 mos.			
	16	18	14*
Attend religious services ≥weekly			
	35	24	43***
Intact childhood family			
	51	43	56***
Mother's education level			
<high school	18	17	14
High school/GED	32	32	31
>high school	51	51	46
REPRODUCTIVE			
Age at menarche			
<11	9	11	8**
11	17	18	17
12	27	28	27
13	27	23	29
14	13	12	14
>14	6	8	6
Ever had intercourse			
Yes	43	74	19***
No	58	26	81
No. of partners in last 12 mos.			
0	62	30	84***
1	25	45	11
≥2	14	25	5
Past gynecologic diagnosis			
	10	18	5***

*p<.05. **p<.01. ***p<.001. Notes: Percentages are weighted; p values are from chi-square tests. GED=general equivalency diploma.

the last 12 months, and 14% reported two or more. Ten percent of adolescents had received a diagnosis of a gynecologic problem.

Nearly half the sample (43%) reported recent sexual and reproductive health service use. Between 2002 and 2006–2008, service use declined from 47% to 40%. The majority of adolescents who had used services were aged 18–19 and white, had at least some secondary education, were born in the United States and were insured. Additionally, more than half had incomes below 200% of the federal poverty level, and three-quarters were employed or still in school. Women who attended religious services at least weekly, were from an intact childhood family situation and had had a previous gynecologic diagnosis comprised minorities of service users. Most service users had experienced menarche by age 14, were sexually experienced and had had at least one recent sexual partner.

Seventy-five percent of the sample had received parental communication, and 92% had received formal communication. The majority of adolescents who had used services had received parental communication and formal communication (79% and 94%, respectively—Table 2). In the unadjusted analysis, higher proportions of service users than of nonusers had received nearly all types of sexual and reproductive health communication. However, the reverse was true for receipt of both parental and formal abstinence-only communication. These associations were consistent when tested by survey year (2002 vs. 2006–2008); data are available upon request.

Similarly, among adolescents who had received parental or formal communication, 43% and 44%, respectively, had used any reproductive health services (Table 3); yet, fewer had used contraceptive-specific services (38% and 37%). The proportions who had used all types of services except emergency contraceptive provision and “other” family planning services were higher among those who had received parental or formal communication than among those who had not. These results were generally consistent when examined by survey year. However, in 2002, formal communication was not associated with services for Pap smear screenings, pelvic exams, provision of contraceptives, contraceptive checkups, or STD testing or treatment. Full data are available upon request.

In the multivariate analysis, adolescents who had received parental sexual and reproductive health communication had higher odds than others of having used sexual and reproductive health services (odds ratio, 1.6—Table 4, page 10). This association was consistent across models for each survey year and among those who had had sex. However, receipt of parental abstinence-only communication was negatively associated with service use for the pooled sample (0.4) and in 2006–2008 (0.3), but not in 2002. Among sexually experienced adolescents who had received parental abstinence-only communication, there was a trend toward less service use (0.5).

Receipt of formal sexual and reproductive health communication was not associated with service use in any regression model. However, receipt of any formal communication approached significance for the sexually

TABLE 2. Percentage of women aged 15–19 who have received sexual and reproductive health communication, by communication type, according to whether they used sexual and reproductive health services

Communication type	Used	Did not use
Any parental	79	71**
Any contraceptive	70	47***
Contraceptive methods	63	41***
Where to get contraceptives	52	27***
STDs	58	49**
Using condoms	37	22***
Abstinence	59	61
Abstinence-only	4	12***
Any formal	94	90**
Contraceptive methods	77	66***
Abstinence	88	87
Abstinence-only	17	24**
Comprehensive	70	60***

p<.01. *p<.001. Notes: Percentages are weighted; p values are from chi-square tests. na=not applicable.

experienced adolescents, as did formal comprehensive communication in 2002. All interaction terms for communication by survey year were nonsignificant.

Adolescents' odds of service use were positively associated with age, education, relatively infrequent religious participation, sexual experience, number of recent partners and history of gynecologic problems; they were higher among whites and blacks than among Hispanics. Young women who had grown up in intact families had reduced odds of reporting service use, and the odds were negatively associated with age at menarche. Findings were largely consistent across models. All interaction terms by survey year were nonsignificant except age-by-year. The

TABLE 3. Percentage of women aged 15–19 who have used sexual and reproductive health services in the last 12 months, by type of service use, according to whether they received parental and formal sexual and reproductive health communication

Service use	Parental		Formal	
	Yes (N=1,736)	No (N=590)	Yes (N=2,132)	No (N=194)
Any	43**	34	44**	28
Gynecologic	30	25	30*	20
Pap smear	28*	22	28*	18
Pelvic exam	20	20	21*	13
Contraceptive	38***	25	37***	22
Provision of method	31***	20	30***	17
Provision of emergency contraceptive†	5	3	2	2
Counseling	20***	12	20**	9
Emergency contraceptive counseling	2	<1	5**	1
Checkup	21***	12	20*	11
Other family planning	12	11	12	9
Pregnancy test‡	12	11	12	9
Abortion‡	1	1	2	1
Any STD	13**	8	12*	7

*p<.05. **p<.01. ***p<.001. †Based on those who had ever used an emergency contraceptive. ‡Based on those with sexual experience. Notes: Percentages are weighted; p values are from chi-square tests.

interaction term did not affect point estimates and was not included in the final reduced models.

DISCUSSION

Parental sex communication benefits a variety of adolescent sexual and reproductive health outcomes.^{12–18} Multiple studies have linked receipt of sex information from parents with later sexual debut, reduced number of sexual partners, increased contraceptive and condom use, and more negative views of pregnancy.^{14,15} Yet, we know of no studies that have examined associations between health service use and receipt of parental information on contraception, STDs and abstinence.

In our study, adolescents' receipt of parental sexual and reproductive health communication was positively associated with their use of services from 2002 to 2006–2008. However, parental abstinence-only communication was negatively associated with service use, increasingly so from 2002 to 2006–2008. Among sexually inexperienced adolescents, abstinence-only communication may have reinforced a perception that sexual and reproductive health care is not yet relevant. However, a marginal negative association was found even when we controlled for sexual experience (which may be an indicator of need or readiness for sexual and reproductive health care).⁴ Further investigation is needed to determine whether abstinence information from parents deters adolescents' use of sexual and reproductive health services.

A broader body of literature indicates that formal abstinence education programs do not improve, but may actually worsen, sexual and reproductive health in some cases.^{24,25,26} A 2007 congressionally mandated study of 13 federally funded abstinence-only programs reported that 11 of them conveyed false information and that overall, the programs had no benefits for adolescents' sexual behavior.²⁴ Other rigorous systematic reviews have supported these findings.^{25,26} By contrast, formal comprehensive sex education programs have been shown to promote positive reproductive health outcomes,^{24,25,26} including delayed sexual debut among the youngest adolescents, reduced number of partners, and increased STD and pregnancy prevention behaviors.²⁶

Limitations

In our study, receipt of formal communication was not associated with adolescent women's use of services. Given that nearly all of the adolescents in our sample reported having received at least some formal sexual and reproductive health communication, it is difficult to detect associations, particularly because these data do not permit examination of the content, quality or intensity of formal communication. Furthermore, declining numbers of adolescents who had used services from 2002 to 2006–2008 may have further reduced our ability to detect associations over time. In 2002, but not 2006–2008, receipt of formal comprehensive communication showed a marginally significant association with service use.

TABLE 4. Odds ratios (and 95% confidence intervals) from logistic regression analyses assessing the likelihood that adolescent women used sexual and reproductive health services, by selected characteristics

Characteristic	Total	2002	2006–2008	Sexually experienced
Year				
2002	1.0	na	na	1.0
2006–2008	0.6 (0.4–0.7)***	na	na	0.6 (0.4–0.8)**
Receipt of reproductive health communication‡				
None (ref)	1.0	1.0	1.0	1.0
Any parental	1.6 (1.2–2.2)**	1.6 (1.1–2.3)*	1.7 (1.0–2.7)*	1.6 (1.1–2.4)*
Parental abstinence-only	0.4 (0.2–0.7)**	0.7 (0.3–1.5)	0.3 (0.1–0.6)***	0.5 (0.3–1.1)†
Any formal	1.4 (0.8–2.4)	1.7 (0.9–3.2)	1.1 (0.4–2.9)	1.9 (1.0–3.7)†
Formal abstinence-only	0.8 (0.6–1.2)	0.8 (0.5–1.2)	0.8 (0.5–1.5)	0.8 (0.5–1.3)
Formal comprehensive	1.3 (0.9–1.7)	1.4 (1.0–2.0)†	1.1 (0.7–1.8)	1.3 (0.8–1.9)
Age				
15 (ref)	1.0	1.0	1.0	1.0
16	1.6 (1.0–2.4)*	1.7 (1.0–3.0)†	1.3 (0.7–2.5)	3.3 (1.3–8.1)**
17	2.0 (1.3–3.0)**	2.2 (1.3–3.8)**	1.8 (1.0–3.5)†	3.1 (1.3–7.2)**
18	2.7 (1.8–4.3)***	1.7 (0.9–3.1)	4.2 (2.2–8.1)***	4.3 (2.1–8.9)***
19	1.9 (1.1–3.2)**	2.1 (0.9–5.0)	2.2 (1.3–3.8)**	3.7 (1.7–8.2)***
Race and ethnicity				
Hispanic (ref)	1.0	na	1.0	1.0
White	1.6 (1.1–2.3)*	na	1.9 (1.0–3.6)†	1.5 (0.9–2.6)
Black	1.7 (1.2–2.7)**	na	2.0 (1.1–3.9)*	2.2 (1.1–4.4)*
Other	1.5 (0.9–2.7)	na	1.9 (0.8–4.5)	2.2 (0.8–6.0)
Education				
<high school (ref)	1.0	1.0	na	na
In high school	1.6 (1.0–2.6)	1.8 (1.0–3.3)*	na	na
Completed high school/GED	2.0 (1.0–4.0)	2.0 (0.9–4.6)	na	na
Any college	2.6 (1.3–5.3)**	4.5 (1.8–11.3)***	na	na
Intact childhood family				
No (ref)	1.0	1.0	1.0	na
Yes	0.6 (0.5–0.8)***	0.6 (0.4–0.8)**	0.6 (0.4–0.9)**	na
Attends religious services				
≥weekly (ref)	1.0	na	1.0	1.0
<weekly	1.4 (1.0–2.0)*	na	1.5 (0.9–2.4)	1.5 (0.9–2.3)
Never	1.7 (1.1–2.4)**	na	1.9 (1.0–3.4)*	1.8 (1.1–2.9)*
Age at menarche				
<11 (ref)	1.0	1.0	na	1.0
11	0.9 (0.5–1.5)	0.9 (0.4–2.1)	na	0.5 (0.2–1.1)
12	0.6 (0.3–0.9)*	0.5 (0.2–1.1)	na	0.5 (0.2–1.1)
13	0.5 (0.3–0.9)*	0.4 (0.2–1.0)*	na	0.4 (0.2–1.0)*
14	0.5 (0.3–0.8)**	0.4 (0.2–1.0)*	na	0.4 (0.2–1.0)
>14	0.6 (0.3–1.3)	0.6 (0.2–1.6)	na	0.6 (0.2–1.7)
Ever had intercourse				
No (ref)	1.0	na	1.0	na
Yes	2.2 (1.1–4.1)*	na	3.9 (1.7–9.1)**	na
No. of partners in last 12 mos.				
0 (ref)	1.0	1.0	1.0	1.0
1	5.1 (2.6–9.7)***	11.1 (7.3–16.98)***	3.4 (1.4–8.1)**	4.8 (2.5–9.1)***
≥2	5.3 (2.4–11.4)***	22.9 (12.3–42.5)***	2.1 (0.8–5.6)	5.0 (2.3–10.9)***
Past gynecologic diagnosis				
No (ref)	1.0	1.0	1.0	1.0
Yes	6.4 (4.3–9.5)***	5.2 (3.1–8.4)***	8.4 (4.6–15.3)***	4.3 (2.2–8.6)***

*p<.05. **p<.01. ***p<.001. †p<.10. ‡Results are from models with each communication variable entered separately. Covariate estimates are stable across all models. Notes: na=not applicable. ref=reference group. GED=general equivalency diploma.

Alternatively, our null findings for formal communication may suggest that adolescents' service use is more strongly associated with parental than formal sexual and reproductive health communication. Some evidence suggests that adolescents perceive information from parents as the most trusted and influential in sexual decision making and behavior.¹⁰

More generally, our findings may reflect the complexity and overlap of sources of sexual and reproductive health communication for adolescents in this country, which likely relate to health outcomes and service use.¹⁰ Formal public health and policy initiatives have emphasized the importance of parent-child sex communication,²⁷ and 37 states currently require schools to involve parents

in formal sex education.²⁷ Parental notification of sex education provision is required in 21 states, and parental consent for student participation in three.²⁷ Eleven states require inclusion of educational content focusing on how to talk to family members, especially parents, about sex.²⁷

Policies that more directly mandate parental involvement in minors' service provision vary across states^{28–30} and may also have confounded our results. The majority of studies on parental involvement in adolescents' family planning services, both mandated and not, have focused on parental awareness of adolescents' need for and use of services,^{28–33} the influence of content and comprehensiveness of parent-provided sex information on service use has not received comparable attention. In an extensive review of this research, Jones and Boonstra suggest that parental knowledge of adolescent health visits or contraceptive use is not indicative of broader parent-child discussions on sexuality and pregnancy prevention.²⁸ They cite a study that found that mothers' awareness of daughters' clinic visits increased over time, but levels of communication remained stable, and neither mothers' knowledge of clinic visits nor sex-related discussions with their daughters were associated with consistent contraceptive use.³³

Determining how associations between parental communication and service use differ at the state policy or program level was beyond the scope of our study. Moreover, our results only suggest associations between parental communication and adolescents' sexual and reproductive health service use. More research is required to understand the interplay between parental and formal communication; the content, quality and intensity of sex information; adolescent service use; and the broader social and political environment.

Furthermore, we have attempted to control statistically for socioeconomic characteristics that are associated with disparities in sexual and reproductive health communication and service use.^{7,20} Yet, we may not have captured all of them, and our understanding of the complex relationships between these characteristics, sexual and reproductive health communication and service use, based upon these data, is limited.

Our study has several other important limitations. Data relied on adolescent women's retrospective self-reports; thus, recall of specific communication received or health services used may be inaccurate. Although we investigated trends over time, data for individual participants were cross-sectional. Most important, we chose service use as our primary outcome in regression models, but could not determine temporal associations or infer causal associations. Use of health services inherently increased adolescents' opportunities to receive formal sexual and reproductive health communication, and may have facilitated greater communication between parents and children. Indeed, many health providers and clinics (up to 43% in one national survey³¹) have adopted activities, including formal educational programs, to encourage parent-child sex communication.²⁸ Future research using prospective, longitudinal and time series data, and more precise measurements of

formal and parental communication and types of services received, can better assess directional and dynamic associations between sexual and reproductive health communication and service use.

Conclusion

Overall, our findings suggest that receipt of parental sexual and reproductive health communication is positively associated with such service use among U.S. adolescent women; however, parental abstinence-only communication appears to be negatively associated with health care-seeking. Public health and policy strategies aimed at promoting comprehensive sexual and reproductive health communication between adolescents and their parents may facilitate use of these services and ultimately enhance teenagers' sexual and reproductive health. Further examination of the relationships between such communication and service use can shed light on adolescents' sexual and reproductive health knowledge and needs.

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