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## Factors Associated with Contraceptive Use Differ between Younger and Older African-American Female Adolescents

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### Abstract

**Study Objective:** To examine differences in factors associated with contraceptive use between younger and older adolescent age groups, which has not previously been well described.

**Design:** Age group-specific analyses were performed on cross-sectional survey data to identify factors associated with any contraceptive use at last sex among younger (14-to 16-year-old) and older (17-to 19-year-old) sexually active African American female adolescents; interaction analyses were used to assess whether these associations differed by age.

**Setting:** Adolescent reproductive health clinic in Atlanta, Georgia.

**Participants:** Sexually active African American female adolescents 14–19 years of age.

**Interventions:** No intervention tested; cross-sectional design.

**Main Outcome Measure:** Self-reported contraceptive use during most recent vaginal sex with a male partner.

**Results:** The prevalence of contraceptive use at last sex was identical in both groups; however, factors associated with contraceptive use differed according to age. The only factor associated with contraceptive use in both age groups was involvement in decisions about sexual health in the most recent relationship. Associations between factors and contraceptive use significantly differed according to age. History of sexually transmitted infection, age difference with partner, discussion

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of condoms with partner, and concurrent partners were important factors among younger adolescents; worry about pregnancy and discussion of birth control with partner were important among older adolescents.

**Conclusion:** Factors associated with contraceptive use at last sex differ according to adolescent age; this should be considered when designing counseling and interventions for teens, as well as research.

### Keywords

Contraception; Condoms; African American; Adolescent; Pregnancy; Sexually transmitted infection

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## Introduction

Adolescence is a time of rapid cognitive, psychosocial, and emotional change, characterized by increasing autonomy, capacity for abstract thought, and future orientation.<sup>1</sup> Although these changes are relevant for contraceptive decision-making, few studies have considered whether associations with contraceptive use differ according to adolescent age.<sup>2,3</sup> We examined factors associated with contraceptive use at last sex for younger (14-to 16-year-old) and older (17-to 19-year-old) African American female adolescents and assessed whether these associations differed by age.

## Methods

### Data Source and Sample

We used data from a 2012 cross-sectional audio computer-assisted self-interview survey conducted as part of a mixed-methods study at a single urban adolescent reproductive health clinic in Atlanta, Georgia. Eligibility criteria included female gender, self-identification as US-born African American, age from 14 to 19 years, and history of vaginal sex with a male partner within the past 6 months; all participants sought clinical care on the day of recruitment. After a full description of the study, interested adolescents who were eligible to participate completed signed informed consent or assent. Complete survey methods are described elsewhere.<sup>4</sup> Emory University and the US Centers for Disease Control and Prevention granted institutional review board approval (including waiver of parental consent) for this study.

### Measures

The outcome, any contraceptive use at last sex (hereafter ‘contraceptive use’), included use of a condom, hormonal method, and/or intrauterine device at last vaginal sex; less effective methods (e.g., withdrawal) were not included. On the basis of previous literature,<sup>5–8</sup> we selected variables of interest in 4 categories: (1) social factors and current risk behaviors; (2) past sexual and contraceptive experiences; (3) characteristics of current or most recent sexual relationship; and (4) perceptions and worries about sexual health. The variable, involvement in sexual health decisions, a scale, was met if the participant indicated that, alone or equally with her most recent partner, she made decisions about all of the following

topics: pregnancy, birth control, condoms, and sexually transmitted infection (STI) testing; the scale was not met if she reported that her partner was the primary decision-maker in 1 or more of these areas.

### Statistical Analyses

First, we assessed bivariate associations between each variable and contraceptive use for younger (14-to 16-year-old) and older (17-to 19-year-old) adolescents using  $c^2$  tests. Next, we assessed associations of variables with contraceptive use for each group by using multivariable logistic regression, starting with all variables associated with the outcome ( $P < .20$ ) in age group-specific bivariate analysis, and using stepwise selection to refine the models; we retained significantly associated variables ( $P < .05$ ). Finally, we tested for interactions between each variable and age, and calculated adjusted odds ratios for each age group for significant ( $P < .05$ ) variable interaction terms. SAS version 9.3 (SAS Institute, Cary, NC) was used for all analyses.

### Results

We surveyed 350 adolescents; 122 were 14–16 years old and 228 were 17–19 years old (Table 1). In both age groups, 63% (77/122 and 144/228, respectively) reported contraceptive use at last sex. A greater percentage of younger adolescents used condoms alone (27% [33/122]), and a greater percentage of older adolescents used a nonbarrier contraceptive alone (25% [57/228]). Use of dual methods was similar between the two age groups (19% [23/122] and 21% [48/228], respectively). Similar percentages of each group had a previous STI; a greater percentage of older adolescents had a previous pregnancy. Age groups also significantly differed in age at first sex and insurance status (Table 1).

In both age groups, those reporting involvement in sexual health decisions had significantly increased odds of contraceptive use in multivariable analyses (Table 2). Among younger adolescents, those reporting a previous STI, age difference  $\geq 2$  years with partner, absence of concurrent partners, and discussion of condom use with partner had significantly increased odds of contraceptive use. Among older adolescents, odds of contraceptive use were significantly higher among those reporting a previous pregnancy, having a mother who was a teen mother, and lack of recent worry about pregnancy. Odds of contraceptive use were significantly lower among older adolescents who reported perception of possible infertility, discussion of whether to get pregnant with partner, and weekly or more frequent sex.

The interaction analysis showed that several associations between variables and contraceptive use differed significantly according to age group (Table 3). Factors that were significantly associated with contraceptive use at last sex in younger compared with older adolescents included previous STI, age within 2 years of partner, lack of concurrent partners, and discussion of condom use with partner. Factors that were significantly associated with contraceptive use at last sex in older adolescents compared with younger adolescents included lack of worry about pregnancy in the past 6 months and discussion of whether to use birth control with partner.

## Discussion

The prevalence of contraceptive use at last sex was the same (63%) for younger and older adolescents. However, factors associated with contraceptive use differed according to age group. This is consistent with a previous study that showed differences in factors associated with STI diagnoses by age; however, for younger adolescents the only significantly associated variable was having a casual sex partner,<sup>9</sup> while previous STI diagnoses and higher impulsivity scores were associated with STI diagnoses in older adolescents.

In age-specific multivariable analyses, the only factor significantly associated with contraceptive use in both age groups in our study was involvement in sexual health decisions. This is consistent with previous research,<sup>8</sup> and underscores the importance of counseling adolescents of all ages on healthy relationships and preparing them to communicate with sexual partners about these topics. The clinical encounter provides an opportunity to inquire about how decisions are made in relationships, and to teach and role play involvement in contraceptive decision-making. As per current clinical guidelines, the option of female-controlled contraceptive options such as long-acting reversible contraceptives should be highlighted. In addition, communicating with adolescents using motivational interviewing strategies to understand their personal decision-making context and motivations can help them to create successful strategies to address challenges at any age.

Personal experience of the consequences of unprotected sex were positively associated with contraceptive use. History of an STI was more strongly associated with contraceptive use among younger adolescents. Younger participants were also significantly more likely to report using a condom only at last sex. History of a pregnancy was more strongly associated with contraceptive use among older adolescents. Older participants were also more likely to use a nonbarrier method alone at last sex. The increased salience of pregnancy among older adolescents might be because previous pregnancy was more common among participants from this group and their peers; this also might be due to increased experience in or exposure to child-bearing or child-rearing. A focus group analysis in this population also described the value of personal experience in prompting precautions.<sup>10</sup>

There were also differences between age groups regarding discussion of contraceptive options with the most recent partner, which coincided with the more commonly used contraceptive type among each age group; having ever discussed whether to use condoms with her partner was significantly associated with contraceptive use only among younger adolescents, and having discussed whether to use birth control was significantly associated only among older adolescents. Both of these associations were also found to be significantly different between the 2 age groups. Because this analysis used cross-sectional data without deeper information on motivation and time line, it is unknown whether participants first decided on the method of their choice and then discussed this with their partner, if participants were more likely to select a method that they would be comfortable discussing with their partner, or if the selection of a contraceptive was a shared decision that resulted from their discussion.

There were other differences in associations according to age; some associations were significant only among younger adolescents. It is possible that, because of earlier sexual initiation, younger adolescents represented a subpopulation with higher sexual behavior risk. However, these differences might also relate to developmental changes. For example, more than a 2-year age difference with the partner was associated with lower odds of contraceptive use only among younger adolescents in the age-specific multivariate model; in the interaction analysis this association was significantly different between younger and older adolescents. As autonomy increases, adolescents might be more empowered in sexual decision-making with older and also with same-age partners. In addition, only among younger adolescents did those who reported concurrent partners have decreased odds of contraceptive use; this association was also significantly different according to age group. Because of less mature cognitive and emotional development, younger adolescents might not fully understand or address the risk associated with concurrency, or might be less able to negotiate contraceptive use during transitions between sexual relationships. Recent worry about pregnancy was associated with lack of contraceptive use only among older adolescents, another association significantly different according to age. This might be because older adolescents could more realistically assess their level of risk regarding recent behavior, as hypothesized in a previous study regarding predicted STI risk.<sup>3</sup> This finding suggests the need to help younger adolescents better understand and assess their risk, so that they can make choices about how to protect themselves.

This study had some limitations, including a relatively small sample size resulting in wide confidence intervals. The sampling was among African American teens who presented for care at a single urban clinic, which could limit generalizability. The cross-sectional design can identify associations but not establish causality. In addition, we investigated contraceptive use at last sex, not consistent contraceptive use over time.

In conclusion, there were a number of differences in factors associated with contraceptive use according to age. Results support special attention to counseling regarding healthy partner communication, particularly among adolescents who indicate lack of current involvement in sexual decision-making and among younger adolescents with a partner who is more than 2 years older. Results also reinforce that an opportunity to reflect on personal experiences and how to apply that knowledge to future decisions could be an effective counseling tool among adolescents. Analyses of larger, more representative samples are needed to better understand whether and how developmental changes shape contraceptive decision-making. Further confirmation of these findings would support analyses of adolescent contraceptive use according to age, or considering that age group might be an effect modifier. Better understanding of the differences in factors associated with contraceptive use among older and younger adolescents could help to develop more effective, age-tailored interventions, and contraceptive counseling for adolescents.

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**Table 1**

Select Characteristics of Cross-Sectional Survey Participants, According to Age Group

Characteristic	14–16 Years (n = 122)	17–19 Years (n = 228)
Uninsured *	17%	28%
Mother was teen mother	64%	65%
Previous STI	41%	45%
History of pregnancy *	19%	30%
Number of lifetime sex partners		
1	11%	12%
2–3	50%	38%
4	39%	50%
Frequency of sex with partner		
Weekly or more frequent	42%	52%
Less than weekly	58%	48%
Age at first sex *		
<14	31%	11%
14	33%	21%
15	29%	24%
16	8%	33%
17	NA	10%
18	NA	1%
19	NA	0%
Used any contraceptive at last sex	63%	63%
Used condom only at last sex *	27%	17%
Used nonbarrier contraceptive only at last sex	17%	25%
Dual method use at last sex (condom with nonbarrier method)	19%	21%

NA, not applicable; STI, sexually transmitted infection.

\* Significant difference between age groups ( $P < .05$ ).

**Table 2**

Bivariate and Multivariate Associations between Select Factors and Any Contraceptive Use at Last Sex According to Age among African-American Adolescents Attending a Reproductive Health Clinic—Atlanta, 2012

Factor	Bivariate analyses				Multivariable analyses (age-stratified)			
	14–16 Years old		17–19 Years old		14–16 Years old (n = 121)*		17–19 Years old (n = 217)*	
	n	Used contraceptive at last sex, %	P	n	Used contraceptive at last sex, %	aOR (95% CI)	aOR (95% CI)	
Social factors/Current risk behaviors								
Insurance status								
Uninsured	21	43	.035 <sup>†</sup>	65	54		.066 <sup>†</sup>	
Insured or unknown <sup>‡</sup>	101	67		163	67			
Mother was a teen mother <sup>§</sup>								
Yes	74	65	.88	141	69		.014 <sup>†</sup>	
No <sup>‡</sup>	41	63		77	52		2.1 (1.1–4.0)	
Binge drinking (past 1 month)								
Yes	9	44	.29 <sup>  </sup>	44	59		.53	
No	113	65		184	64			
Past experiences								
Previous pregnancy								
History of pregnancy	24	67	.069	68	72		.069 <sup>†</sup>	
No history of pregnancy <sup>‡</sup>	98	62		160	59		2.8(1.4–5.9)	
Previous STI								
History of STI	50	76	.014 <sup>†</sup>	103	67		.17 <sup>†</sup>	
No history of STI <sup>‡</sup>	72	54		125	59		4.8 (1.8–13.1)	
Age at first sex								
<15 Years old	77	61	.53	73	60		.54	
> 15 Years old	45	67		155	65			
Number of lifetime sexual partners								



Factor	Bivariate analyses				Multivariable analyses (age-stratified)			
	14-16 Years old		17-19 Years old		14-16 Years old (n = 121)*		17-19 Years old (n = 217)*	
	n	Used contraceptive at last sex, %	P	n	Used contraceptive at last sex, %	aOR (95% CI)	aOR (95% CI)	
1-3	75	63	.90	114	65			
>4	47	64		114	61			
Characteristics of current/most recent relationship								
Age difference with partner <sup>§</sup>								
< 2 Years	96	67	.043 <sup>†</sup>	147	63	3.4(1.2-9.7)		
> 2 Years <sup>‡</sup>	26	46		80	63			
Seriousness of relationship								
Serious boyfriend	63	63	.93	133	59	.16 <sup>†</sup>		
Other	59	63		95	68			
Frequency of sex with partner <sup>§§</sup>								
Weekly or more frequent	51	59	.41	119	55	.0088 <sup>†</sup>	0.48 (0.25- 0.90)	
Less than weekly <sup>‡</sup>	71	66		108	72			
Concurrent partners <sup>§§</sup>								
No concurrent partners	64	75	.0043 <sup>†</sup>	124	65	5.7 (2.1- 15.0)		
Definitely/possibly concurrent partners <sup>‡</sup>	58	50		103	62			
Ever agreed to be monogamous with partner <sup>§§</sup>								
Yes	104	65	.32	186	61	.074 <sup>†</sup>		
No	17	53		41	76			
Ever discussed whether to get pregnant <sup>§§</sup>								
Yes	61	62	.76	129	56	.0062 <sup>†</sup>	0.47 (0.25-0.92)	
No <sup>‡</sup>	60	65		98	73			
Ever discussed whether to use birth control <sup>§§</sup>								
Yes	57	65	.78	120	68	.18 <sup>†</sup>		

Factor	Bivariate analyses				Multivariable analyses (age-stratified)			
	14-16 Years old		17-19 Years old		14-16 Years old (n = 121)*		17-19 Years old (n = 217)*	
	n	Used contraceptive at last sex, %	P	n	Used contraceptive at last sex, %	aOR (95% CI)	aOR (95% CI)	
No	64	63		107	59			
Ever discussed whether to use condoms <sup>§</sup>								
Yes	65	74	.012 <sup>‡</sup>	149	61	3.0(1.2-7.3)		
No <sup>‡</sup>	56	52		78	68			
Involvement in sexual health decisions <sup>§,¶</sup>								
Involved	103	69	.0038 <sup>‡</sup>	188	67	4.6(1.3-16.4)	2.4 (1.1-5.4)	
Not involved in at least one decision type <sup>‡</sup>	18	33		39	46			
Perceptions and worries about sexual health								
Perception of possible infertility								
Thinks she might be infertile	29	59	.57	69	52	.024 <sup>‡</sup>	0.47 (0.24-0.92)	
Does not think she might be infertile <sup>‡</sup>	93	65		159	68			
Perception of consequences of pregnancy								
Pregnancy would be the "worst thing"	49	67	.43	61	75	.021 <sup>‡</sup>		
Other	73	60		1667	59			
Worry about pregnancy (past 6 months)								
Has not worried about getting pregnant	71	66	.41	127	74	.0001 <sup>‡</sup>	2.7 (1.4-5.0)	
Has worried about getting pregnant <sup>‡</sup>	51	59		101	50			
Worry about STIs (past 6 months)								
Has not worried about getting an STI	72	65	.55	140	68	.033 <sup>‡</sup>		
Has worried about getting an STI	50	60		88	55			

Highlighted cells denote variables significantly ( $P < .05$ ) associated with contraceptive use at last sex on multivariate analysis after stepwise selection for the younger age group (orange), older age group (blue), and both age groups (green).

aOR, adjusted odds ratio; CI, confidence interval; STI, sexually transmitted infection.

\* Participants with missing values for 1 or more variables were excluded for multivariate analyses.

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<sup>‡</sup> Variables with  $P$  values  $< .20$  on bivariate analysis for an age group were considered via stepwise selection for the multivariate model for that age group; variables remained in the model if they were significant to  $P < .05$ .

<sup>‡</sup> Referent category in multivariate analysis.

<sup>§</sup> Some participants had missing values; this indicates that the participant did not know the information, discontinued the survey before answering the question, or elected to skip the question.

// Fisher exact test used.

<sup>¶</sup> A participant was classified as "involved" if she indicated that, alone or equally with her most recent partner, she made decisions about all of the following topics: whether to get pregnant, birth control use, condom use, and getting STI testing.

**Table 3**

Interaction Analysis of Adolescent Age Group and Factors Associated with Contraceptive Use—Atlanta, 2012

Factor Interaction Term with Age Group	<i>P</i> *	14–16 Years old	17–19 Years old
		aOR <sup>†</sup> (95% CI)	aOR <sup>†</sup> (95% CI)
Social factors/current risk behaviors			
Insurance status	.067		
Mother was a teen mother	.14		
Binge drinking (past 1 month)	.16		
Past experiences			
Previous pregnancy	.9		
Previous STI	<b>.0048</b>	21.5 (3.7–125.6)	1.3 (0.6–2.9)
Age at first sex	.24		
Number of lifetime sexual partners	.27		
Characteristics of current/most recent relationship			
Age difference with partner	<b>.018</b>	13.5 (2.7–68.5)	1.6 (0.7–3.3)
Seriousness of relationship	.66		
Frequency of sex with partner	.19		
Concurrent partners	<b>.0020</b>	28.7 (4.3–193.2)	1.1 (0.5–2.4)
Ever agreed to be monogamous with partner	.36		
Ever discussed whether to get pregnant	.75		
Ever discussed whether to use birth control	<b>.0048</b>	0.3 (0.07–1.1)	2.6 (1.2–5.6)
Ever discussed whether to use condoms	<b>.0025</b>	3.5 (1.1–11.0)	0.4 (0.2–0.9)
Involvement in sexual health decisions	.11		
Perceptions and worries about sexual health			
Perception of possible infertility	.13		
Perception of consequences of pregnancy	.32		
Worry about pregnancy (past 6 months)	<b>.027</b>	0.4 (0.1–1.6)	2.4 (1.1–5.1)
Worry about STIs (past 6 months)	.86		

aOR, adjusted odds ratio; CI, confidence interval; STI, sexually transmitted infection.

Significant *P* values are indicated in bold.\* *P* < .05 indicates that the association of the variable with contraceptive use differed significantly between the 2 age groups.<sup>†</sup> Provided for variables with significant *P* value on interaction analysis.