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Contraceptive experiences among adolescents who experience unintended birth

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Abstract

Background—Adolescents are at high risk of unintended pregnancy due to contraceptive nonuse and inconsistent use.

Study Design—We examined associations between contraception and mistimed/unwanted birth among adolescents. For contraceptive nonusers, we analyzed factors contributing to unintended birth.

Results—Half of adolescents with unintended births did not use contraception at conception. Those ambivalent about pregnancy reported fewer unwanted [relative risk (RR)=0.06] compared to wanted births. Amongst contraceptive nonusers, difficulty accessing birth control was the only factor associated with more unwanted birth (RR=3.05). For Black adolescents, concerns of side effects (RR=7.03), access issues (RR=10.95) and perceived sterility (RR=3.20) were associated with unwanted birth. For younger teens, falsely perceived subfertility increased unwanted birth (RR=2.74), whereas access issues were significant for older teens (RR=3.97).

Conclusions—Access issues and misconceptions around contraceptive side effects and fertility place adolescents at higher risk for unintended pregnancy, especially among younger and Black teens. Ambivalence represents an additional area for intervention.

Keywords

Contraception; Barriers; Adolescent pregnancy; Unintended birth

1. Introduction

Adolescent childbearing imposes a challenge to both mothers and their children, especially when the pregnancy is unintended. While some adolescent mothers do well [1], most teens experience long-term adverse educational, social and economic consequences compared to

nonpregnant counterparts [2–4]. Over the long term, children of adolescent mothers are more likely to experience abuse and neglect [5], fail to graduate from high school [6] and become incarcerated [7] compared to children of older mothers. The overall cost of teen childbearing to taxpayers in the United States is at least \$9.1 billion [8].

Of the 410,000 births to adolescents each year in the United States [9], more than 80% are unintended [10]. Women who have unintended pregnancies receive less prenatal care, consume more alcohol and report higher rates of physical violence and abuse than those with intended pregnancies [11,12]. Children of unintended adolescent births are less likely to be healthy, be breastfed or receive well-baby care during infancy [13] and have more negative affect and higher levels of fearfulness during childhood than children of intended adolescent births [14]. Associated health outcomes worsen with decreasing degrees of intendedness, from wanted to mistimed to unwanted birth [15].

Unintended birth is more common among younger women, unmarried women, low-income women, women who have not completed high school and minorities [10]. Many factors affect how a woman understands her pregnancy as intended or unintended, including her relationship status, high parity, low socioeconomic status, educational goals, family commitments and societal expectations [16]. Prior to conception, ineffective contraception — defined as nonuse, inconsistent use or use of methods with high failure rates — is a strong predictor of an unplanned pregnancy.

The most common reasons reported by women who risk unintended pregnancy through unprotected intercourse include lack of thought or preparation, being in a strong relationship and concern around contraceptive side effects [17]. Reasons why women may not practice effective contraception include negative attitudes about methods, perceived barriers to method use, perceived low support from partners and peers, low self-efficacy, poor communication skills and involvement in risk behaviors [12]. For teens in particular, living in a neighborhood characterized by poor supervision, inadequate community resources and high levels of behaviors that depart from a conventional lifestyle — such as leaving school — can also increase the risk of ineffective contraception [12]. Women who engaged in unprotected intercourse that resulted in unintended birth frequently cite not minding getting pregnant, concerns over side effects and beliefs of sterility as reasons for contraceptive nonuse [18]. Among one group of teens receiving care in an adolescent-oriented maternity program, “not minding becoming pregnant” and “wanting to get pregnant” were the two most common reasons for contraceptive nonuse [19]. Other studies have found that the absence of negative attitudes or ambivalence toward childrearing, rather than negative attitudes toward contraception, were the most commonly cited reason for not using birth control [20,21]. Access to providers, cost, confidentiality and medication side effects can also affect adolescent birth control use [22].

Current literature has not found a strong association between contraceptive use and pregnancy intention among teens. A recent study found that pregnancy desire and mistiming were strongly related to decisions around pregnancy termination, but only weakly associated with contraceptive use among adolescent women [23]. However, in a separate study, sexually active teenagers who considered pregnancy an impediment to their ability to

achieve educational or vocational goals were twice as likely to report prior and planned contraceptive use [24]. Similarly, adolescent women committed to not getting pregnant used protection in half of subsequent coital events over a 3-month period, compared to those not committed to pregnancy prevention who contracepted less than 25% of the time [25]. Thus, the specific relationship between adolescents' motivation to engage in sexual activity, their childbearing goals and their contraceptive behaviors remains unclear.

An adolescent who has an unintended birth may end the pregnancy through abortion, continue the pregnancy and proceed with adoption, or continue the pregnancy and parent; it is also possible that she might have a miscarriage. The aforementioned research examining pregnancy intention and contraceptive use focuses on those who report unintended pregnancy, without distinguishing adolescents who continue their pregnancies from those who choose abortion. Teens with unintended births represent a subset of adolescents with unintended pregnancies who were unwilling or unable to choose another option. Thus, a better understanding of contraceptive experiences and behaviors among this group may help to target those at highest risk of adverse maternal and child outcomes.

2. Materials and methods

The Pregnancy Risk Assessment Monitoring System (PRAMS) is an ongoing state- and population-based surveillance system of the Centers for Disease Control and Prevention and state health departments. It uses a mixed-mode data collection system to obtain self-reported information on perinatal and maternal health indicators from mothers who recently gave birth to a live infant. Mailed surveys are initially sent to participants 4 months after delivery, with repeat mailings and telephone follow-up. Participating states randomly sample between 1300 and 3400 women each year. Women from certain groups are sampled at a higher rate to ensure that adequate data are available in smaller, but higher-risk, populations [26]. In the following analyses, we included only women who gave birth in one of the 30 states that voluntarily participated in PRAMS between 2000 and 2005 and were less than 18 years old at time of conception (estimated using maternal and infant month and year of birth and gestational age at delivery). Although adolescence is generally defined as extending through 21 years of age, we restricted our analyses to respondents under the age of 18 years due to wide variation in legislative barriers to contraceptive access between legal minors and adults.

2.1. Definitions and measures

The PRAMS survey assesses pregnancy intention by asking women, "Thinking back to just before you got pregnant with your new baby, how did you feel about becoming pregnant?" Responses of "I wanted to be pregnant sooner" or "I wanted to be pregnant then" were coded as wanted. Responses of "I wanted to be pregnant later" were coded as mistimed. Responses of "I didn't want to be pregnant then or at any time in the future" were coded as unwanted. Women were then asked about their use of contraception, and those who reported "not doing anything to keep from getting pregnant" were subsequently asked to identify all of their reasons for not using contraception. Potential rationales included statements such as "I didn't mind if I got pregnant" (ambivalence about pregnancy), "I thought I could not get

pregnant at that time” (falsely perceived subfertility), “I had side effects from the birth control method I was using” (concerns about side effects), “I had problems getting birth control when I needed it” (access issues), “I thought my husband or partner or I was sterile (could not get pregnant at all)” (perceived sterility), “My husband or partner didn’t want to use anything” (partner pressure) and *Other [specify]*, where respondents could free text reasons for contraceptive nonuse.

2.2. Analysis

We initially conducted bivariate multinomial logistic regression analyses of respondents’ pregnancy intention by demographic characteristics including age, race, Hispanic ethnicity, health insurance status, age-appropriate completion of middle school and receipt of The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) services during pregnancy, as well as by self-report of contraception at time of conception. Among adolescents who reported not using birth control when they became pregnant, we employed both bivariate and multivariable logistic regression models to evaluate respondents’ reasons for contraceptive nonuse by pregnancy intention. All demographic variables were included in multivariable analyses, regardless of statistical significance.

Because of potential differences in conceptualization of pregnancy intendedness and experiences with contraception, we repeated our multivariable analyses on subgroups defined on the basis of adolescents’ race/ethnicity (non-Hispanic White, non-Hispanic Black and Hispanic) and estimated age at time of conception (15 years and younger; 16–17 years). Finally, we tested our model specification by including Title X family planning region as a proxy for family planning service availability and found no significant changes from the initial model.

All data analyses were performed with STATA 11.0 to account for the complex survey design. The University of Rochester Research Subjects Review Board approved this study.

3. Results

3.1. Sample characteristics

Our study sample included 9779 females from 11 through 17 years, with a median age of 17 years (mean 16.6 years, sample skewed). Most adolescents were white, were non-Hispanic and had age-appropriate middle school completion. While Medicaid insured most teens, more than one quarter reported no insurance. We found significant differences among pregnancy intention by age, race, Hispanic ethnicity, insurance and education (Table 1). White adolescents and those of Hispanic ethnicity were more likely to report intended birth, as opposed to Black adolescents who more often reported unwanted or mistimed birth. Teens with Medicaid were overrepresented among those reporting unwanted birth, in contrast to teens without insurance who were underrepresented in this group and more likely to report intended birth.

3.2. Unintended birth and contraceptive use

The majority of our study sample (79%) identified their birth as unintended; 15% of births were reported as unwanted, and 65% were reported as mistimed. Eighty-two percent of teens in PRAMS ($n=7996$) responded to the question on contraceptive use at time of conception. Of these, almost half of adolescents reporting unintended birth (48%) used contraception, compared to about a quarter of teens (30%) reporting intended birth ($p<.001$).

3.3. Reasons for contraceptive nonuse

Our initial bivariate analyses of teens not contracepting at conception ($n=4297$) showed significant differences by pregnancy intention with adolescents' report of ambivalence about pregnancy, falsely perceived subfertility, partner pressure and issues accessing contraception. Each explanation of contraceptive nonuse, except for ambivalence, was associated with a higher percentage of adolescents reporting mistimed or unwanted birth. Our multivariable results (Table 2) support these findings, with an expected reduction in significance and magnitude of effect. Adolescents reporting mistimed or unwanted birth were more than twice as likely to have had difficulty obtaining contraception compared to adolescents reporting wanted birth. Teens who experienced partner pressure not to use birth control reported higher rates of mistimed, but not unwanted, birth. Conversely, those who were ambivalent about pregnancy were significantly less likely to report a mistimed or unwanted birth. In the overall sample, concerns about birth control side effects, falsely perceived subfertility and perceived sterility were not associated with contraceptive nonuse among those reporting unintended birth.

3.4. Race and contraceptive experiences

Fig. 1 shows the results of the multivariable analysis of reasons for contraceptive nonuse among adolescents reporting unwanted birth by race/ethnicity. Among White ($n=1615$), Black ($n=1333$) and Hispanic ($n=736$) teens, those who were ambivalent about pregnancy were significantly less likely to report unwanted birth. Black adolescents reporting unwanted birth were more than 7 times as likely to report concerns about birth control side effects and almost 11 times as likely to report problems obtaining birth control. In contrast, Hispanic teens with unwanted births were less likely to report concerns of contraceptive side effects. There were two marginally significant findings not shown in the figure. Perceived sterility was associated with an increased likelihood of unwanted birth among Black teens [relative risk (RR)=3.20, 95% confidence interval (CI)=0.88–11.65], and partner pressure was associated with an increased likelihood of unwanted birth among White teens (RR=2.43, 95% CI=0.96–6.18). Mistimed birth had similar, but less pronounced, trends.

3.5. Age and contraceptive experiences

Fig. 2 shows the results of the multivariable analysis of reasons for contraceptive nonuse among adolescents reporting unwanted birth by age group (15 years and younger; 16–17 years). Ambivalence about pregnancy was consistently significant across age groups and was associated with a lower likelihood of reporting mistimed or unwanted birth. Falsely perceived subfertility increased the risk of both mistimed and unwanted birth by more than twofold among adolescents younger than 16 years ($n=657$), though it was only significant

for mistimed birth likely due to larger sample size. Access issues were associated with an increased risk of unintended birth for both age groups, but the effect size was larger among 16- and 17-year-olds ($n=2926$) where the association was significant likely due to the larger sample size. Concerns of contraceptive side effects were associated with a decreased likelihood of unwanted birth among younger teens only. Perceived sterility was also significant only for teens younger than 16 years and was associated with a lower risk of mistimed birth ($RR=0.10$, 95% $CI=0.03-0.33$). Partner pressure was significant only for teens older than 15 years and was associated with an increased risk of mistimed birth ($RR=1.70$, 95% $CI=1.06-2.72$).

Black race was associated with an increased risk of mistimed and unwanted birth, but the association was only significant among adolescents ages 16 and 17 years (respectively, $RR=1.66$, 95% $CI=1.01-2.74$; $RR=3.31$, 95% $CI=1.88-5.86$). Hispanic ethnicity was associated with a reduced risk of both mistimed ($RR=0.23$, 95% $CI=0.09-0.62$) and unwanted ($RR=0.08$, 95% $CI=0.02-0.32$) birth in adolescents 15 years and younger, but did not appear to have a significant effect among older adolescents.

4. Discussion

Difficulty obtaining contraception more than doubled an adolescent's risk of unintended birth, especially among older teens. This finding is most significant among Black adolescents, for whom trouble accessing contraception increased the likelihood of mistimed and unwanted birth by more than sevenfold. Additionally, Black teens identified side effects and beliefs of sterility as barriers to effective contraception, while younger adolescents reported falsely perceived subfertility as a risk factor for unintended birth. Ambivalence around pregnancy was associated with fewer unintended births among all adolescents.

Challenges in accessing contraception may be related to a number of sociocultural factors including family support, financial costs, insurance coverage, clinic proximity, provider attitudes and pharmacy issues. The fact that younger adolescents did not identify access barriers is likely reflective of a perceived inability to become pregnant and consequent lack of attempts to use contraception. Access issues identified by teens in PRAMS focused on financial barriers ("I lost [my] job — no money for birth control pills."), insurance barriers ("They cut off Medicaid."), family barriers ("My mother doesn't believe in birth control.") and medication access barriers ("I didn't get a refill on my birth control." and "I missed [my] apt for depo."). These obstacles were especially prominent for Black adolescents experiencing unwanted birth, likely due to some of the aforementioned factors. Other research has noted perceived lack of privacy and concerns of confidentiality among African-American adolescents [27] that were not included in PRAMS, but may act as additional barriers to obtaining reproductive health care.

Contraceptive side effects have always presented concerns for adolescents [28], who may focus more on short-term challenges than long-term benefits. Lack of adequate counseling or understanding of methods may additionally play a role. Our findings that concerns of side effects were associated with more unwanted birth among Black teens echo a recent study of African-American adolescents, who reported worries of both immediate unwanted side

effects and long-term medical complications as reasons for not using contraception [27]. These worries were represented by comments such as “[I was] afraid of the side effects,” “[I didn’t use contraception] because of weight gain” and “[Birth control] made me sick” in our sample. In light of these previous studies, our findings of an association between concerns of contraceptive side effects and fewer unwanted births among Hispanic and younger teens are difficult to interpret and merits further study.

While beliefs of sterility have not been prominently discussed in the literature around adolescent pregnancy [19], they were associated with a trend towards increased risk of unwanted birth for Black adolescents in our study. Teens directly referenced sterility with remarks including “I kept having miscarriages,” and “[My] partner told [me] he could never have kids.” In addition, many younger adolescents made comments consistent with a belief that they could not get pregnant at that time. Comments often focused on respondents’ age (“I thought I was too young to get pregnant”) and recent onset of sexual activity (“[I] didn’t think it would happen the first time”). These are consistent with the identification of falsely perceived subfertility as a risk for unintended birth among younger adolescents and may reflect lack of knowledge or perception of invincibility in this age group [29].

Ambivalence about pregnancy has long been discussed as a risk factor for ineffective contraception, pregnancy and childbearing during adolescence [30]. Analyses of the National Longitudinal Study of Adolescent Health (Add Health) found that having conflicting or inconsistent attitudes around pregnancy reduced the likelihood of consistent contraception [31]. Reports of “I didn’t mind getting pregnant” and “I just didn’t get around to it” accounted for almost one third of the reasons for not using birth control in another study [19]. Similarly, many adolescents in PRAMS explained their lack of contraception by comments such as “Getting pregnant wasn’t on my mind,” and “I never thought about it,” reflecting the strong relationship between ambivalence and intended birth.

4.1. Limitations

The PRAMS data cannot be generalized to women in nonparticipating states or to women who do not deliver a live born infant. Additionally, there is likely nonresponse bias due to similarities between nonrespondents and women at the highest risk of having an unintended birth [32], including adolescents [33].

We would have liked to examine associations between barriers to contraceptive use and unintended birth among different socioeconomic groups. However, detailed income information is not available for the majority of the PRAMS sample, and available proxies, such as receipt of WIC services, educational attainments and Medicaid insurance, may not sufficiently capture respondents’ socioeconomic status.

Another limitation of the PRAMS data set is the retrospective and self-reported nature of the questions used to determine pregnancy intention and contraceptive use. It is possible that women’s views of pregnancy wantedness and memories around contraceptive decision-making may change from preconception through pregnancy and delivery. In addition, these intention constructs have not been strongly associated with contraceptive behaviors in other studies [23]. Concerns have also been raised about the sensitivity of defining pregnancy

intention from standard survey questions, as variation in outcomes may depend on degree of mistiming [15]. Despite these challenges in understanding and classifying pregnancy intention, these measures produce accurate estimates of both the number and consequences of unintended birth [11,34] and are the best option available at this time.

5. Conclusions

Adolescents are at high risk of becoming pregnant unintentionally and are the age group most likely to experience resultant adverse outcomes. Ambivalence around pregnancy goals places adolescents at high risk of early pregnancy, representing one area for public health intervention. While pregnancy ambivalence seems to limit effective contraceptive use, there are clearly additional factors that play into teens' decisions and ability to effectively use contraception. Our study provides additional evidence that contraceptive experiences are extremely complex and vary across race/ethnicity and age groups. Adolescents, particularly Black adolescents, continue to struggle with contraceptive access and concerns around side effects and sterility, while younger adolescents are challenged by falsely perceived subfertility. Further research is needed to better understand how to help adolescents reduce contraceptive and fertility misconceptions and improve access to effective pregnancy prevention methods in order to reduce unintended teen birth.

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References

- [1]. Duncan GJ, Hoffman SD. Teenage welfare receipt and subsequent dependence among black adolescent mothers. *Fam Plann Perspect.* 1990; 22:16–20. 35. [PubMed: 2182339]
- [2]. Coley R, Chase-Lansdale P. Adolescent pregnancy and parenthood. Recent evidence and future directions. *Am Psychol.* 1998; 53:152–66.
- [3]. Fergusson DM, Boden JM, Horwood LJ. Abortion among young women and subsequent life outcomes. *Perspect Sex Reprod Health.* 2007; 39:6–12. [PubMed: 17355376]
- [4]. Maynard, R., editor. Kids having kids: a Robin Hood Foundation special report on the costs of adolescent childbearing. The Robin Hood Foundation; New York City (NY): 1996. p. 1–20. Available at: <http://www.robinhood.org/media/7490/khk.pdf> [Accessed April 4, 2011]
- [5]. Goerge, RM.; Harden, AW.; Lee, BJ. Consequences of teen childbearing for child abuse, neglect, and foster care placement. In: Maynard, R.; Hoffman, S., editors. Kids having kids. 2nd ed. The Urban Institute Press; Washington, DC: 2008. p. 257–88.
- [6]. Hoffman, SD.; Scher, LS. Consequences of teen childbearing for the life chances of children, 1979–2002. In: Maynard, R.; Hoffman, S., editors. Kids having kids. 2nd ed. The Urban Institute Press; Washington, DC: 2008. p. 342–58.
- [7]. Scher, LS.; Hoffman, SD. Incarceration-related costs of early childbearing: updated estimates. In: Maynard, R.; Hoffman, S., editors. Kids having kids. revised edition. The Urban Institute Press; Washington, DC: 2010.
- [8]. Hoffman, S. By the numbers: the public costs of teen childbearing. National Campaign to Prevent Teen Pregnancy; Washington, DC: 2006.

- [9]. Vital signs: teen pregnancy – United States, 1991–2009. *MMWR Morb Mortal Wkly Rep.* 2011; 60(13):414–20. [PubMed: 21471949]
- [10]. Finer L, Henshaw S. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspect Sex Reprod Health.* 2006; 38:90–6. [PubMed: 16772190]
- [11]. D’Angelo DV, Gilbert BC, Rochat RW, Santelli JS, Herold JM. Differences between mistimed and unwanted pregnancies among women who have live births. *Perspect Sex Reprod Health.* 2004; 36:192–7. [PubMed: 15519961]
- [12]. Santelli J, Rochat R, Hatfield-Timajchy K, et al. The measurement and meaning of unintended pregnancy. *Perspect Sex Reprod Health.* 2003; 35:94–101. [PubMed: 12729139]
- [13]. Kost K, Landry DJ, Darroch JE. The effects of pregnancy planning status on birth outcomes and infant care. *Fam Plann Perspect.* 1998; 30:223–30. [PubMed: 9782045]
- [14]. Baydar N. Consequences for children of their birth planning status. *Fam Plann Perspect.* 1995; 27:228–34. 245. [PubMed: 8666086]
- [15]. Pulley L, Klerman L, Tang H, Baker B. The extent of pregnancy mistiming and its association with maternal characteristics and behaviors and pregnancy outcomes. *Perspect Sex Reprod Health.* 2002; 34:206–11. [PubMed: 12214911]
- [16]. Frost JJ, Darroch JE. Factors associated with contraceptive choice and inconsistent method use, United States, 2004. *Perspect Sex Reprod Health.* 2008; 40:94–104. [PubMed: 18577142]
- [17]. Nettleman MD, Brewer J, Ayoola A. Why women risk unintended pregnancy. *J Fam Pract.* 2009; 58:E1–5. [PubMed: 19358792]
- [18]. Nettleman MD, Chung H, Brewer J, Ayoola A, Reed PL. Reasons for unprotected intercourse: analysis of the PRAMS survey. *Contraception.* 2007; 75:361–6. [PubMed: 17434017]
- [19]. Stevens-Simon C, Kelly L, Singer D, Cox A. Why pregnant adolescents say they did not use contraceptives prior to conception. *J Adolesc Health.* 1996; 19:48–53. [discussion 54–5]. [PubMed: 8842860]
- [20]. Sheeder J, Tocce K, Stevens-Simon C. Reasons for ineffective contraceptive use antedating adolescent pregnancies, part 1: an indicator of gaps in family planning services. *Matern Child Health J.* 2009; 13:295–305. [PubMed: 18483838]
- [21]. Stevens-Simon C, Sheeder J, Harter S. Teen contraceptive decisions: childbearing intentions are the tip of the iceberg. *Women Health.* 2005; 42:55–73. [PubMed: 16418122]
- [22]. Burnhill M. Contraceptive use: the US perspective. *Int J Gynaecol Obstet.* 1998; 62:S17–23. [PubMed: 9806234]
- [23]. Santelli J, Orr M, Lindberg LD. Pregnancy intentions, contraceptive use at the time of conception, and pregnancy-related behaviors among adolescents. *J Adolesc Health.* 2010; 46:S53.
- [24]. Jumping-Eagle S, Sheeder J, Kelly LS, Stevens-Simon C. Association of conventional goals and perceptions of pregnancy with female teenagers’ pregnancy avoidance behavior and attitudes. *Perspect Sex Reprod Health.* 2008; 40:74–80. [PubMed: 18577139]
- [25]. Bartz D, Shew M, Ofner S, Fortenberry JD. Pregnancy intentions and contraceptive behaviors among adolescent women: a coital event level analysis. *J Adolesc Health.* 2007; 41:271–6. [PubMed: 17707297]
- [26]. Centers for Disease Control and Prevention. [Accessed March 9, 2011] Pregnancy Risk Assessment Monitoring System (PRAMS): methodology. Available at: <http://www.cdc.gov/prams/methodology.htm>
- [27]. Gilliam ML, Davis SD, Neustadt AB, Levey EJ. Contraceptive attitudes among inner-city African American female adolescents: barriers to effective hormonal contraceptive use. *J Pediatr Adolesc Gynecol.* 2009; 22:97–104. [PubMed: 19345915]
- [28]. Clark LR. Will the pill make me sterile? Addressing reproductive health concerns and strategies to improve adherence to hormonal contraceptive regimens in adolescent girls. *J Pediatr Adolesc Gynecol.* 2001; 14:153–62. [PubMed: 11748010]
- [29]. Wetherill RR, Fromme K. Alcohol use, sexual activity, and perceived risk in high school athletes and non-athletes. *J Adolesc Health.* 2007; 41:294–301. [PubMed: 17707300]
- [30]. Zabin LS, Astone NM, Emerson MR. Do adolescents want babies? The relationship between attitudes and behavior. *J Res Adolesc.* 1993; 3:67–86. [PubMed: 12318551]

- [31]. Bruckner H, Martin A, Bearman PS. Ambivalence and pregnancy: adolescents' attitudes, contraceptive use and pregnancy. *Perspect Sex Reprod Health*. 2004; 36:248–57. [PubMed: 15687083]
- [32]. Dietz P, Adams M, Spitz A, Morris L, Johnson C. Live births resulting from unintended pregnancies: is there variation among states? *Fam Plann Perspect*. 1999; 31:132–6. [PubMed: 10379430]
- [33]. Shulman H, Gilbert B, Msphbrenda C, Lansky A. The Pregnancy Risk Assessment Monitoring System (PRAMS): current methods and evaluation of 2001 response rates. *Public Health Rep*. 2006; 121:74–83. [PubMed: 16416701]
- [34]. Joyce T, Kaestner R, Korenman S. On the validity of retrospective assessments of pregnancy intention. *Demography*. 2002; 39:199–213. [PubMed: 11852837]

Fig. 1.

Multivariable analyses: barriers to contraceptive use among adolescents reporting unwanted birth by race/ethnicity. **p<.05; ***p<.01. Multivariate subgroup model controls for additional individual-level factors including age, educational attainment, insurance and receipt of WIC services. Partner pressure, perceived sterility and falsely perceived subfertility results not significant and not shown. Diamonds represent RR, and bracketed vertical lines represent 95% CIs.

Fig. 2.

Multivariable analyses: barriers to contraceptive use among adolescents reporting unwanted birth by age group. * p<.10; ** p<.05; *** p<.01. Multivariate subgroup model controls for additional individual-level factors including race, Hispanic ethnicity, educational attainment, insurance and receipt of WIC services. Partner pressure and perceived sterility results not significant and not shown. Diamonds represent RR, and bracketed vertical lines represent 95% CIs.

Table 1

Demographic information by overall sample and pregnancy intention

	Total sample	Pregnancy intention			p Value
		Intended	Mistimed	Unwanted	
Sample size, <i>n</i> (%)	9779	2028 (20.7)	6333 (64.8)	1418 (14.5)	N/A
Median age, years	17	17	17	16	N/A
Race					
White, <i>n</i> (%)	5332 (55.2)	1354 (67.5)	3450 (55.2)	528 (37.8)	<.001
Black, <i>n</i> (%)	3060 (31.7)	395 (19.7)	1974 (31.6)	691 (49.5)	
Asian, <i>n</i> (%)	433 (4.5)	70 (3.5)	313 (5.0)	50 (3.6)	
Other, <i>n</i> (%)	831 (8.6)	186 (9.3)	518 (8.3)	127 (9.1)	
Hispanic ethnicity, <i>n</i> (%)	1715 (18.4)	565 (29.0)	1016 (16.8)	134 (10.0)	<.001
Insurance					
None, <i>n</i> (%)	2708 (27.7)	695 (34.3)	1668 (26.3)	345 (24.3)	<.001
Medicaid, <i>n</i> (%)	4253 (43.5)	883 (43.5)	2678 (42.3)	692 (48.8)	
Other, <i>n</i> (%)	2818 (28.8)	450 (22.2)	1987 (31.4)	381 (26.9)	
Education					
>9 years, <i>n</i> (%)	8675 (90.1)	1692 (84.9)	5706 (91.5)	1277 (91.2)	<.001
WIC services during pregnancy, <i>n</i> (%)	7617 (78.9)	1632 (81.9)	4908 (78.5)	1403 (76.8)	.039

Sample size represents unweighted counts.

Table 2

Multivariate analyses: barriers to contraceptive use among adolescents reporting unintended birth

Variable	Pregnancy intention	
	Mistimed vs. wanted	Unwanted vs. wanted
	RR (95% CI)	RR (95% CI)
Barriers to contraception		
Ambivalence about pregnancy	0.19 ^{***} (0.13–0.27)	0.06 ^{***} (0.03–0.10)
Falsely perceived subfertility	1.32 (0.91–1.92)	1.28 (0.82–2.01)
Side effects	1.05 (0.60–1.87)	1.05 (0.52–2.13)
Access issues	2.36 ^{**} (1.26–4.41)	3.05 ^{***} (1.48–6.31)
Perceived sterility	0.87 (0.50–1.52)	1.22 (0.63–2.36)
Partner pressure	1.53 ^{**} (1.01–2.33)	1.24 (0.74–2.05)
Race		
Black vs. White	1.58 [*] (1.00–2.50)	3.38 ^{***} (2.00–5.71)
Ethnicity		
Hispanic	0.79 (0.54–1.17)	0.52 ^{**} (0.30–0.90)
Insurance		
Medicaid	0.55 ^{**} (0.35–0.86)	0.78 (0.45–1.35)
Uninsured	0.60 ^{**} (0.38–0.96)	0.65 (0.37–1.15)

Other variables accounted for in the model, but not significant, include age, educational attainment, Asian and other race, and receipt of WIC services.

*
p<.1.

**
p<.05.

p<.01.