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Factors Associated with Young Adults' Pregnancy Likelihood

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Abstract

OBJECTIVES—While progress has been made to reduce adolescent pregnancies in the United States, rates of unplanned pregnancy among young adults (18–29 years) remain high. In this study, we assessed factors associated with perceived likelihood of pregnancy (likelihood of getting pregnant/getting partner pregnant in the next year) among sexually experienced young adults who were not trying to get pregnant and had ever used contraceptives.

METHODS—We conducted a secondary analysis of 660 young adults, 18–29 years old in the United States, from the cross-sectional *National Survey of Reproductive and Contraceptive Knowledge*. Logistic regression and classification tree analyses were conducted to generate profiles of young adults most likely to report anticipating a pregnancy in the next year.

RESULTS—Nearly one-third (32%) of young adults indicated they believed they had at least some likelihood of becoming pregnant in the next year. Young adults who believed that avoiding pregnancy was not very important were most likely to report pregnancy likelihood (odds ratio [OR], 5.21; 95% CI, 2.80–9.69), as were young adults for whom avoiding a pregnancy was important but not satisfied with their current contraceptive method (OR, 3.93; 95% CI, 1.67–9.24), attended religious services frequently (OR, 3.0; 95% CI, 1.52–5.94), were uninsured (OR, 2.63; 95% CI, 1.31–5.26), and were likely to have unprotected sex in the next three months (OR, 1.77; 95% CI, 1.04–3.01).

DISCUSSION—These results may help guide future research and the development of pregnancy prevention interventions targeting sexually experienced young adults.

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Conflict of Interest

The authors have no conflicts of interest to disclose.

Keywords

Pregnancy in adolescence; unplanned pregnancy; unwanted pregnancy; family planning; contraception

INTRODUCTION

While the United States has experienced a significant reduction in unintended adolescent (age 15–17 years) pregnancies over the past two decades, unintended pregnancies among women in all other reproductive-age groups have either increased or stayed the same.^{1–3} Currently, the highest rate of unintended pregnancy occurs among young adult women aged 20–24 years.³ In fact, more than half (55%) of all unintended pregnancies in the United States occur to women in their twenties, while less than 20% occur to adolescent women.^{1,3} Unmarried, young adult women (age 18–24 years), who are poor or cohabiting, consistently report the highest rates of unintended pregnancy in the U.S.^{1,3}

Unintended pregnancies have been associated with a number of negative infant and maternal health outcomes, including decreased use of prenatal care early in pregnancy, increased risk for low birth weight, and increased risk for postpartum depression.^{4–6} Despite the belief among most (86%–94%) young adults that pregnancy should be planned, more than 70% of pregnancies that occur in unmarried women in this age group (18–29 years) are unplanned.⁷ Non-use and/or inconsistent use of contraceptives likely contribute to the higher rates of unplanned pregnancies among young adults.⁷ According to the National Campaign to Prevent Teen and Unplanned Pregnancy, nearly one-fifth (18%) of unmarried, sexually active women in their twenties did not use any method of contraception at their last sexual intercourse.⁸

Previous results from the *National Survey of Reproductive and Contraceptive Knowledge* revealed that the reasons why young adults do not use contraception, or use contraceptive methods inconsistently, are varied but frequently pertain to personal beliefs and expectations about sex and pregnancy, partner's desire to use or not use contraception, and lack of personal knowledge of and/or experiences using contraception.^{8,9} This was particularly true for unmarried young adult women who experienced an unplanned birth in the past year. In this survey, when asked why they did not use any method of contraception, young adult women said that they did not think they could get pregnant (32%), they did not expect to have sex (20%), they didn't mind if they got pregnant (18%), their partner didn't want to use a birth control method (16%), and they were worried about the side effects of the birth control method (15%). In addition, young adult Hispanic women have been found to lack knowledge regarding contraceptive options.⁹ With regard to unplanned pregnancy, young adults who underestimate the effectiveness of contraception are more likely to anticipate an unplanned pregnancy compared to those who do not underestimate effectiveness, while those who have higher perceived knowledge of contraceptive methods are at lower risk for anticipating unplanned pregnancy.¹⁰

More than 400 risk and protective factors have been associated with sexual behavior, pregnancy, childbearing and sexually transmitted infection in adolescents.¹¹ Included among

the risk factors for adolescent pregnancy are older age^{12–20}, being black, Hispanic or of mixed race/ethnicity;^{14,19,21–26} and having good friend(s) who have been pregnant or gotten someone pregnant.^{27,28} Among the protective factors associated with a lower risk of adolescent pregnancy are frequent attendance at religious services;^{29,30} positive attitudes toward condom use and other forms of contraception;³¹ receipt of contraceptive instruction;³² having (parent's) private health insurance;¹³ and having a greater internal locus of control regarding pregnancy prevention;^{30,33} While all of these factors have been associated with adolescent pregnancy in previous studies, their associations with perceived likelihood of becoming pregnant among young adults have not been established.

There is a gap in the literature regarding perceived likelihood of unintended pregnancy among sexually active young adults. Identifying factors associated with perceived likelihood of becoming pregnant among young adults is crucial, not only for the development of interventions to prevent unplanned pregnancies, but also to improve preconceptional and maternal health, and to reduce adverse birth outcomes among these young people. In the current study, we utilized the 2009 *National Survey of Reproductive and Contraceptive Knowledge* to examine factors associated with perceived pregnancy likelihood (belief in the likelihood of getting pregnant/getting partner pregnant in the next year) among unmarried, sexually experienced young adult men and women (aged 18–29 years) in the U.S. who were not trying to get pregnant and who had ever used contraceptives. This study focused on young adults who are unmarried and sexually active as this group may be at higher risk for unintended pregnancies. Further, the present study is designed expand knowledge of factors that may increase their perceived risk of unintended pregnancies using national level data and innovative data analyses techniques such as classification and regression trees (CART).

METHODS

Study Design

Data from the *National Survey of Reproductive and Contraceptive Knowledge* were used for this investigation³⁴. This survey, which was funded by the National Campaign to Prevent Teen and Unplanned Pregnancy (NCTPTUP) and conducted by the Guttmacher Institute and Field Research Corporation, assessed reproductive and contraceptive knowledge and beliefs among young adults who were not married at the time of the survey. It was a nationally representative, cross-sectional survey of 1800 young adult men and women (age 18–29 years) in the United States. Data were collected via telephone interviews using a random digit dial sample (landlines and cell phone numbers) in the fall of 2008 and spring of 2009. The average interview length was 29 minutes for the women and 23 minutes for the men. The number of men and women was approximately equal (897 females and 903 males) and the sample was racially/ethnically diverse. More information about the survey design, sampling and data collection can be found at <http://www.thenationalcampaign.org/fogzone/PDF/methodology.pdf>.³⁴

The survey questions were developed by the Guttmacher Institute; whenever possible the same questions were used as those used in other national surveys such as the National Survey of Family Growth (NSFG).⁷ The questions focused on the following areas relating to contraceptive use and avoiding unintended pregnancy: past sexual behavior; social,

economic, and demographic factors; exposure to information sources about sex; subjective and objective knowledge and misconceptions; intentions, and self-efficacy; and behavior regarding contraceptive use and effective avoidance of unplanned pregnancy. Information was collected on more than 300 variables; the survey categories included education and sex education, knowledge about contraceptive methods and risk for pregnancy, relationships and pregnancy experiences, attitudes about pregnancy, exposure to information sources, current contraceptive-related behavior, and background characteristics.

The sample for the current investigation consisted of 660 young adults (57% females and 43% males) selected based on the following criteria: (1) having ever engaged in sexual intercourse, (2) not currently trying to get pregnant, and (3) previous contraceptive use (had ever used/partner had ever used any method of birth control to prevent pregnancy). The outcome of interest was perceived likelihood of pregnancy in the next year. We measured perceived pregnancy likelihood based on the response to the question, “How likely is it that you will get pregnant/get a partner pregnant in the next 12 months?” Response options included: not at all likely, slightly likely, quite likely, and extremely likely. A two-level dependent variable was created for pregnancy intention with young adults responding “slightly,” “quite,” and “extremely likely” that they/their partner would get pregnant categorized as “any likelihood of becoming pregnancy” and young adults responding “not at all likely” categorized as “not likely of getting pregnant”. We grouped together the “slightly,” “quite,” and “extremely likely” primarily because of the small number of cases for the groups of “quite likely” (16 respondents) and “extremely likely”(14 respondents).

Predictors of perceived pregnancy likelihood were selected based on previous research regarding risk and protective factors associated with adolescent pregnancy¹¹ and divided into sociodemographic, environmental, and personal variables.

Sociodemographic variables—Sociodemographic factors were assessed using four variables that measured respondents’ age (18–19, 20–24, and 25–29 years), gender (male and female), race/ethnicity (white non-Hispanic, black non-Hispanic, Hispanic, and Asian/other), and type of health insurance. Health insurance included four categories: (1) Medicaid only, (2) Medicaid and private insurance, (3) private and other insurance, and (4) uninsured.

Environmental variables—Four environmental related factors were assessed, including respondents’: (1) frequency of attendance at religious services, (2) current living arrangements, (3) having friend(s) who experienced an unplanned pregnancy and (4) perceived family disapproval of having a child out-of-wedlock. These variables were selected based on previous literature,^{13,14,28–30,35–37} in which each was associated with unplanned pregnancy among adolescents. Attendance at religious services were categorized as frequently (once a week), 3 times/month, and never. Current living arrangements included: (1) living with parents, (2) living with partner, and (3) living alone or another living arrangement. Participants were asked whether they agreed or disagreed with the statement, “many of my friends have had unplanned pregnancies.” Responses to this 5-item Likert scale, ranged from strongly agree to strongly disagree. We merged strongly and somewhat agree into a single “agree” category and merged strongly and somewhat disagree into a “disagree” category. Participants were also asked whether they agreed or disagreed

with the statement, “in my family it is not acceptable to have a child out-of-wedlock.” Responses to this 5-item Likert scale question were also grouped into “agree” (strongly/somewhat agree) and “disagree” (somewhat/strongly disagree). No cases were reported for the “neither” response category for all of the variables above.

Personal variables—Seven personal related factors were assessed. Participants indicated “how important is it to you to avoid becoming pregnant/getting someone pregnant” on a 4-item Likert scale ranging from very important to not at all important. Responses to this question were dichotomized into “very important” vs. “somewhat/a little/not at all important.” Locus of control regarding pregnancy prevention was measured using the item “it does not matter whether you use birth control or not; when it is your time to get pregnant, it will happen.” Responses to the 5-item Likert scale ranged from “strongly agree” to “strongly disagree” and were dichotomized into “agree” (indicating an external locus of control) vs. “disagree” (indicating an internal locus of control) categories.

In addition, respondents indicated whether or not they agreed or disagreed with the statement, “I have all the information I need to avoid an unplanned pregnancy.” Responses to the 5-item Likert scale were dichotomized into “strongly agree” vs. “somewhat agree/somewhat disagree/strongly disagree” categories. The belief that “Pregnancy is something that should be planned” was also measured using a 5-item agree-disagree Likert scale. Responses were dichotomized into “strongly/somewhat agree” vs. “strongly/somewhat disagree” categories. Respondents also indicated whether they agreed or disagreed with the statement, “Using birth control is morally wrong.” Responses were dichotomized into “strongly/somewhat agree” vs. “strongly/somewhat disagree” categories. For all of these variables, no responses were found for the “neither” response category.

Further, participants were asked, “Overall, how satisfied are you with your current contraceptive method? Response options, which included “completely satisfied,” “somewhat satisfied,” “somewhat dissatisfied,” and “completely dissatisfied,” were dichotomized into “satisfied” (completely/somewhat satisfied) and “dissatisfied” (somewhat/completely dissatisfied). Finally, participants were asked, “In the next 3 months, how likely is it that you will have sex without using any method of birth control? Responses to the 5-item Likert scale, which ranged from “not at all likely” to “extremely likely,” were dichotomized into “Not at all likely” vs. “slightly/quite/extremely likely.” No responses were found for the “neither” category.

It is important to emphasize that although a number of the survey questions were based on a 5-item Likert scale, participants did not check the “neither” category. Therefore, we included only the four other categories (e.g., strongly agree, agree, strongly disagree, and disagree).

Statistical Analysis

Weighted descriptive statistics were conducted to describe the sample. Chi-square tests were performed to examine associations between the outcome variable and predictor variables. Logistic regression was used to examine the effects of the predictor variables on pregnancy

intention. Odds ratios (95% confidence intervals) were reported to establish the magnitude and direction of these effects.

Classification trees were constructed for this sample to generate profiles of young adults' perceived likelihood of pregnancy. This allowed us to identify subgroups of young adults who believed themselves to be likely to have an unintended pregnancy within the next year. CART, unlike traditional parametric techniques, can uncover complex variable relationships and identify subgroups of individuals who share similar characteristics relative to the outcome variable.³⁸ This technique is used frequently in public health research as it is a nonparametric tool that can handle a large number of variables.³⁹

CART is a recursive partitioning methodology that divides the sample into binary subsamples in order to create homogeneous groups that share similar characteristics. These subsamples can be daughter nodes (nodes that can be split further) or terminal nodes (nodes that cannot be split any further). Cross-validation is typically used to assess the predictive performance of the final tree. The optimal tree is selected based on the lowest cross-validated error rate. Cross validation partitions the sample into subsets from which trees are grown (eg, 10 subsets will generate 10 ancillary cross-validation trees). These classification trees, which have their own misclassification rates, are then combined to yield the cross-validation error rate for the maximal tree. More details about constructing classification trees can be found elsewhere.³⁸ The predictive accuracy of classification trees is similar to logistic regression.⁴⁰ The classification tree in this study was built using the CART software⁴¹. IBM SPSS was used for the logistic regression analyses.⁴² All analyses were weighted to account for study design effects and oversampling.

RESULTS

The sample included 660 sexually experienced young adults; most of whom (77.9%) were in a relationship, while 22.1% were not in a relationship. About 57% were female and 43% were male. The plurality of young adults (40.6%) was between the ages of 20–24 years, while 24.1% were 18–19 years old and 35.3% were 25–29 years old. About 63% were white non-Hispanic, 14.7% were black non-Hispanic, 16.2% were Hispanic and 5.9% were Asian/Other. Most young adults (55.3%) were privately/other insured, while one-fifth (20.9%) were uninsured and 15.3% had Medicaid only. Nearly one-third (32%) of young adults indicated they/their partner are/is likely to get pregnant in the next year. Of the 660 young adults in the final sample, 482 indicated that they were not at all likely to get pregnant/get a partner pregnant in the next 12 months, while 178 reported any likelihood of becoming pregnant within the next year.

Chi-square analyses revealed significant associations between several environmental and personal variables and young adults' pregnancy likelihood (Table 1). With regard to environmental factors, only frequency of attendance at religious services was significantly associated with likelihood of unintended pregnancy. Over forty percent (41.2%) of young adults who attended religious services once a week and about 36% who attended up to 3 times a month expressed some belief of pregnancy likelihood within the next year, whereas

25.1% of young adults who never attended religious services expressed at least some belief of pregnancy likelihood within the next year.

Among the personal factors, young adults who indicated that it was “somewhat/a little/not important” to avoid a pregnancy were significantly more likely to report that they may become pregnant (62.1%) within the next year than young adults who indicated that it was “very important” to avoid a pregnancy (24.7%). Similar findings were observed among young adults who agreed that a pregnancy could happen whether or not they used birth control (38.9%). In contrast, the other 61.1% of young adults who believed pregnancy could happen regardless of contraceptive use reported they were unlikely to become pregnant in the next year.

More than half (54%) of the young adults who were dissatisfied with their current method of contraception reported at least some likelihood of future pregnancy, compared to 30.2% of young adults who were satisfied with their contraceptive method. In addition, more than half (57.1%) of young adults who agreed that “birth control is morally wrong” reported a potential pregnancy in the next year, compared to 30.3% of young adults who disagreed with this statement.

Approximately 27% of young adults who “strongly agreed” that they had enough information to avoid a pregnancy reported a pregnancy likelihood, compared to 44% of young adults who “somewhat agreed/somewhat disagreed/ strongly disagreed” with this statement. Among young adults who said they were likely to have unprotected sex in the next three months, 39.6% indicated a possible pregnancy in the next year, whereas 29.7% of young adults who were not at all likely to have unprotected sex in the next 3 months reported a possible future pregnancy. No significant associations were observed between levels of sociodemographic variables for young adults who reported at least some likelihood of a future pregnancy.

Logistic regression analyses were conducted to determine the influence of sociodemographic, environmental, and personal variables on at least some likelihood that they would become pregnant in the next year (Table 2). Results indicated that Hispanic young adults were 0.38 (95% CI, 0.19–0.75) times less likely than their non-Hispanic white counterparts to report any pregnancy likelihood within the next 12 months. Uninsured young adults were 2.63 (95% CI, 1.31–5.26) times more likely to report some likelihood of a potential pregnancy in the next year than participants with private insurance. Young adults who indicated that avoiding a pregnancy was “somewhat/a little/not important” were more likely (OR, 5.21; 95% CI, 2.80–9.69) to expect a pregnancy than young adults who indicated that it was “very important” to avoid pregnancy. Young adults dissatisfied with their current contraceptive method reported a higher likelihood (OR, 3.93; 95% CI, 1.67–9.24) of a pregnancy than young adults who were satisfied with their current method of contraception. Not having appropriate information on how to avoid pregnancy (OR 2.34; 95% CI, 1.38–3.98), believing that birth control is morally wrong (OR, 2.73; 95% CI, 1.25–5.97), and reporting a high likelihood of having unprotected sex in the next 3 months (OR, 1.77; 95% CI, 1.04–3.01) were all associated with a belief that there was some likelihood of a pregnancy within the next year.

Classification tree analysis revealed a 7 terminal-node tree (terminal nodes consist of a group of cases that share similar characteristics and cannot be further split) (Figure 1). The first node of this tree is the root node which contains the entire sample. Since the outcome variable is binary, one of the two classes/levels namely, “pregnancy is likely” and “pregnancy is not likely”, may be assigned to each terminal node. The most important variables in predicting perceived likelihood of a future pregnancy included how important it is to avoid pregnancy, whether participants were satisfied with their current method of contraception and frequency of attendance at religious services. The variable how important it is to avoid pregnancy split the entire sample found in the root node into two subsamples. Those who answered “somewhat/a little/not important” to how important it is to avoid a pregnancy were moved to the right of the tree, forming terminal node 7 that was classified as “pregnancy is likely”. The likelihood of a pregnancy was higher (62.1%) among young adults reporting that it was “somewhat/a little/not important” to avoid pregnancy (62.1%, terminal node 7). We also found that 66.3% of young adults who reported that it is “very important” to avoid pregnancy, were dissatisfied with their current method of contraception and either never attended religious services or attended up to 3 times a month indicated a likelihood of future pregnancy (terminal node 6). However, 80.8% of young adults reported anticipating a potential pregnancy in the next year if they attended religious services once a week and were likely to have unprotected sex in the next 3 months (terminal node 5). Another subgroup with at least some likelihood for pregnancy (43.6%) included individuals who were satisfied with their current method of contraception, attended religious services once a week or up to 3 times a month, but were uninsured (terminal node 3). The subgroup least likely to report a perceived likelihood of pregnancy was comprised of young adults who reported that it was very important to avoid a pregnancy, were satisfied with their current method of contraception, and never attended religious services (86.9%, subgroup 1).

DISCUSSION

Consistent with the adolescent pregnancy literature, we found significant associations between race/ethnicity, health insurance status, frequency of attendance at religious services, locus of control regarding pregnancy prevention, and certain personal attitudes and beliefs and perceived likelihood of an unintended pregnancy among young adults (aged 18–29 years). While some of our findings on risk and protective factors among young adults were consistent with those previously identified in the literature for adolescent pregnancy, others were divergent. We hypothesized an association between both younger age and minority race/ethnicity and perceived likelihood of unintended pregnancy. In contrast to previous literature, we did not observe an association between at least some pregnancy likelihood and age, and the association with race/ethnicity was counter to what we expected. This suggests that some characteristics of young adults who believe that they may experience a pregnancy in the next twelve months differ from those of adolescents who experienced an unplanned pregnancy. This could be also attributed to differences in unintended pregnancy measures.

Although we did not find a significant association between age and perceived likelihood of pregnancy in our analysis, previous literature has demonstrated an association between age and rates of unintended pregnancies.^{3,43} The National Survey of Family Growth (NSFG) found that 77% of pregnancies among women aged 15 – 19 years, and 50% among women

20–24 years were unintended, compared to only 25% among women aged 25 – 44 years between 2006–2010.⁴³ A study by Finer & Zolna using combined data from the NSFG, National Center for Health Statistics, and the U.S. Census bureau, also found that the proportion of unintended pregnancies decreased with age, with the highest proportion occurring among women aged 20–24 years old.³ In contrast, reports of a possible future pregnancy were fairly consistent between the three age groups of young adults in our analysis (approximately 30%). The differences in these findings are likely due to characteristics of the sample in the current study, including young adults who had used contraceptives and were not trying to get pregnant.

In contrast with our findings that both Hispanic and black young adults were less likely to anticipate becoming pregnant in the next year than whites, the NSFG reported higher percentages of unintended pregnancies among these racial/ethnic groups.⁴³ One possibility for these incongruous results may be that in the current study, we restricted our sample to young adults who used contraceptives and were not trying to get pregnant. Indeed, the NSFG found that when looking at women with unintended pregnancies who did not use contraception, Hispanic women, compared to white and black women, were more likely to report that their reason for not using contraception was that they did not believe they could get pregnant. In contrast, black women were more likely to report concern about adverse side effects of contraceptive methods as their reason for not using contraception to prevent an unintended pregnancy.⁴³

Several other studies that analyzed data from the *National Survey of Reproductive and Contraceptive Knowledge* found racial/ethnic differences in attitudes towards contraceptive use that may help explain differences in unintended pregnancy risk with our sample of young adults.^{44,45} Non-Hispanic black young adults were more likely to report a belief that contraceptive use increased the risk of negative health consequences and decreased sexual desire than their white counterparts.⁴⁴ Black and Hispanic young women were also more likely to report a belief that the government promotes birth control to limit minorities.⁴⁵ Additionally, Hispanic women had less knowledge of effective methods of contraception and were less likely to predict that they would be upset by an unplanned pregnancy.^{9,45,46}

Satisfaction with current contraceptive method was strongly associated with pregnancy likelihood in our study. This is supported by recent research suggesting that dissatisfaction with contraceptive options may lead to increased risk of unintended pregnancy.⁴⁷ In a survey of women seeking abortions for unwanted pregnancy, more than 90% of respondents stated that no contraceptive method had all of the features they thought were extremely important.⁴⁷ Effectiveness, lack of side effects, and affordability were identified as the most important features of contraception.

Another important feature associated with contraception satisfaction among young adults is ease of use. A study of college women found that those who reported use of a non-coital dependent method of contraception were significantly more likely to report being satisfied and less likely to discontinue the method than those who used coital dependent methods.⁴⁸ However, women at risk for unwanted pregnancies do not appear to consider method of contraception in context of length of time they would like to delay pregnancy.⁴⁹ Among

women residing in California who stated they wanted to delay pregnancy for less than two years, more than two years, or avoid pregnancy altogether, there was no pattern to their choice of long-acting versus short-acting/coital-dependent contraceptive methods.⁴⁹ Nationally, few women aged 20 to 24 years elect to use long-acting methods of contraception such as IUD, implant and injectable contraception.⁵⁰ This may be related to lack of knowledge about the existence, availability, and effectiveness of these methods.⁹ Health care providers may be able to increase women's satisfaction with their contraceptive method, and decrease risk of unwanted pregnancy, by providing women with more information on the efficacy, lack of side effects, affordability, and ease of use of long-acting methods of contraception such as IUD, Norplant, and injectable hormonal contraception. Information about contraception, and in particular efficacy of different contraception methods, might be crucial in preventing unintended pregnancies as in the current study we found that having less information on how to avoid a pregnancy increased their likelihood of a future pregnancy.

Further, we found that young adults who attended religious services more frequently believed they were more likely to experience a pregnancy. While these results may seem contrary to previous research, in which more frequent attendance at religious services was associated with a lower likelihood of pregnancy among adolescent females,²⁹ other research may help explain this phenomenon. Increased religiosity, particularly among individuals with conservative religious beliefs, has also been associated with noncontraceptive use and higher birth rates among adolescents.^{51–53} Thus, it is likely that young adults who attend religious services more frequently are also more religiously conservative and more likely to be exposed to conservative attitudes and beliefs that discourage contraceptive use. For religions that desire to reduce unintended pregnancy among young adults, a different approach to their contraceptive education or messaging should be considered, as the current approach appears to be having the opposite effect.

Lack of insurance coverage is likely another barrier to effective contraceptive use in young adults at risk for unintended pregnancies.^{50,50} Uninsured participants in our study were more likely to report likelihood of pregnancy than privately insured subjects. A study of unintended pregnancy rates amongst U.S. states in 2006 found that states with a higher proportion of uninsured women had increased rates of unintended pregnancies.⁵⁴ Among U.S. women aged 18 to 24 years old at risk for unintended pregnancy in 2002, those with private insurance or Medicaid were more likely to use prescription contraceptives than those who were uninsured.⁵⁵

Results from the NSFG reported that 50% of pregnancies resulting in live births were unintended among unmarried cohabitating women between 2006–2009.⁴³ Similarly, in the current study, participants who lived with their partner were more likely to report at least some likelihood that they would become pregnant in the next 12 months compared to those who lived with their parents or had other living arrangements (Table 1). However, while these results were significant in the univariate analyses, they did not reach significance in the adjusted regression model, suggesting that other factors account for the association between cohabitation status and pregnancy likelihood.

Classification trees revealed several subgroups of young adults who indicated pregnancy likelihood in the near future. One group included young adults who reported that it was very important to avoid pregnancy, however they were dissatisfied with their current method of contraception, attended religious services once a week or less, and were likely to have unprotected sex in the next 3 months. In this subgroup, 80.8% of young adults reported pregnancy likelihood in the next 12 months. One possibility for the high risk among this group may be a lack of knowledge or inaccurate knowledge/beliefs regarding other contraceptive options available to them (e.g., belief that IUDs are abortifacients). Thus, being sexually active and dissatisfied with a current contraceptive method, while also believing other contraceptive methods are either not available or not appropriate for them, likely leads to non-use or incorrect use of their current method and contributes to their belief that they will experience a pregnancy. This group deserves further attention with regard to research, such as exploring their contraceptive knowledge and beliefs, as well as in the design of appropriate pregnancy prevention efforts that fit within their religious beliefs. Clinicians can identify and help reduce the risk of unintended pregnancy in this group by asking their young adult patients about their likelihood of unprotected sex and assessing contraceptive satisfaction at each visit.

One limitation to the *National Survey of Reproductive and Contraceptive Knowledge* is the cross-sectional nature of the data. We were unable to determine if a belief in the likelihood of future pregnancy among participants was correlated with an actual unintended pregnancy in the future. Longitudinal research is needed to explore the associations between unplanned pregnancy expectations and rates of unintended/unwanted pregnancies among young adults. When pregnancy likelihood is measured after birth, it is more subject to recall bias, as women may retrospectively view their intentions differently in the presence of an infant.⁶ Examining perceived likelihood prior to the occurrence of a pregnancy allows researchers to identify characteristics associated with young adults who want to prevent a pregnancy, yet believe they are at high risk for an unwanted pregnancy. Another limitation of the survey was the use of a telephone survey with a young population. Response rates in young adult populations tend to be lower in telephone surveys as compared to older adults.⁷ However, to compensate for potential lower response rates and to maximize representativeness, FRC used a combination of random digit dialing, and purchased landline and cell phone numbers.

Lastly, another limitation of this study pertains to the outcome variable. The group with “any likelihood of becoming pregnant” included those who responded that they/their partner was “slightly,” “quite,” and “extremely likely” of getting pregnant. Although each of these groups indicated a likelihood of pregnancy to a certain degree, they are also likely to be different from one other in a variety of ways. Unfortunately, due to the limited number of cases in the “quite” and “extremely likely” groups, we could not assess potential differences in these three groups across a number of characteristics.

Clinical Implications

There are several risk factors clinicians can focus on to identify young adult patients with higher perceived likelihood of unintended pregnancy. These factors include being uninsured, reported likelihood of unprotected sex in the next 3 months, dissatisfaction with current birth

control method, the belief that birth control is morally wrong, frequent attendance of religious services, and the belief that it is not important to avoid pregnancy. Clinicians should ask young adults wishing to avoid unintended pregnancy about their knowledge of long term methods of contraception and satisfaction with current method of contraception at each visit. Young adults with decreased knowledge of contraceptive options believe themselves to be at increased risk of pregnancy. Clinicians should also assess for patient concerns over birth control side effects and provide education as needed. Clinicians may also want to ask about religious or personal beliefs and/or moral objections to contraception that may impact pregnancy intention when counseling young adults. Finally, clinicians may want to discuss with young adults who do not believe it is important to avoid pregnancy the risks and benefits of an unintended pregnancy versus effective pregnancy prevention.

CONCLUSION

This study's results indicate that beliefs regarding the importance of preventing a pregnancy and satisfaction with current contraceptive method were strong determinants of a belief that a future pregnancy was likely, as was more frequent attendance at religious services. The strong role that contraceptive knowledge and personal beliefs play in likelihood of unplanned pregnancy suggests that effective pregnancy prevention interventions should be developed that help young adults increase their knowledge of contraceptive options, including the risks and benefits of various options and cost for uninsured patients, and identify effective contraceptive methods that are appropriate to use within the context of their religious beliefs.

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QUICK POINTS

- Young adult men's and women's beliefs regarding the importance of preventing a pregnancy and satisfaction with their current contraceptive method are strong determinants of a future pregnancy, as is greater attendance at religious services.
- Because of the strong link between dissatisfaction with current contraceptive method and belief in increased risk of unplanned pregnancy, clinicians working with young adults who want to avoid unintended pregnancy should ask about contraceptive satisfaction at each visit.
- The strong role that personal beliefs play in unplanned pregnancy suggests that effective pregnancy prevention interventions should be developed that help young adults identify contraceptive methods that are appropriate to use within the context of their religious beliefs.

Figure 1.
Classification tree of pregnancy likelihood.
Class 1 denotes individuals reporting that a pregnancy is not likely, while class 2 denotes individuals reporting at least some likelihood of a future pregnancy.
^a indicates the terminal node number.

Table 1

Descriptive Statistics (%) of the Weighted Sample by Pregnancy Likelihood

Characteristics	A pregnancy is not likely (%)	Pregnancy is likely (%)	P-value
<u>Sociodemographic</u>			
Age (years)			0.75
18–19	67.1	32.9	
20–24	69.4	30.6	
25–29	64.6	35.4	
Gender			0.80
Female	67.8	32.2	
Male	66.3	33.7	
Race/ethnicity			0.56
Hispanic	72.0	28.0	
White	64.9	35.1	
Black	68.7	31.3	
Asian/other	74.8	25.2	
Health insurance			0.07
Medicaid only	60.8	39.2	
Medicaid and private	65.5	34.5	
Private / other	71.4	28.6	
Uninsured	61.2	38.8	
<u>Environmental</u>			
Frequency of religious services			0.002
Once a week or less	58.8	41.2	
3 times/month	64.3	35.7	
Never	74.9	25.1	
Current living arrangement			0.05
Parents	68.9	31.1	
Partner	55.8	44.2	
Other/ Alone	70.9	29.1	
Many friends have unplanned pregnancy			0.38
Agree	65.5	34.5	
Disagree	71.0	29.0	
Not acceptable to have child out-of-wed			0.31
Agree	70.5	29.5	
Disagree	65.0	35.0	
<u>Personal</u>			
How important to avoid pregnancy			<0.01
Very important	75.3	24.7	
Little/not important	37.9	62.1	
Pregnancy will happen no matter what			0.05
Agree	61.1	38.9	

Characteristics	A pregnancy is not likely (%)	Pregnancy is likely (%)	P-value
Disagree	70.9	29.1	
Satisfied with current method of contraception			0.01
Satisfied	69.8	30.2	
Dissatisfied	45.9	54.1	
Using birth control is morally wrong			0.01
Agree	42.9	57.1	
Disagree	69.7	30.3	
Have info to avoid pregnancy			<0.01
Strongly agree	72.7	27.3	
Somewhat agree/somewhat-strongly disagree	55.6	44.4	
Pregnancy should be planned			0.73
Agree	67.4	32.6	
Disagree	64.3	35.7	
Next 3 months how likely unprotected sex			0.05
Not at all likely	70.3	29.7	
Likely	60.4	39.6	

Table 2

Logistic Regression (Odds Ratios and 95% CI) of Pregnancy Likelihood

Characteristics	OR (95% CI)
<u>Sociodemographic</u>	
Age, yr	
18–19	1.14 (0.51, 2.54)
20–24	0.95 (0.51, 1.75)
25–29	1.00 (Reference Group)
Gender	
Female	1.50 (0.87, 2.59)
Male	1.00 (Reference Group)
Race/ ethnicity	
Hispanic	0.38 (0.19, 0.75)*
Non Hispanic White	1.00(Reference Group)
Non Hispanic Black	0.48 (0.21, 1.11)
Asian/other	0.48 (0.17, 1.31)
Insurance	
Medicaid only	1.11 (0.53, 2.30)
Medicaid and private	1.48 (0.56, 3.91)
Uninsured	2.63 (1.31, 5.26)*
Private / other	1.00 (Reference Group)
<u>Environmental</u>	
Frequency of religious services	
Once a week	3.00 (1.52, 5.94)*
3 times/4 weeks	1.93 (1.09, 3.43)*
Never	1.00 (Reference Group)
Current living arrangement	
Partner	1.91 (0.92, 3.97)
Other/ Alone	1.24 (0.64, 2.42)
Parents	1.00 (Reference Group)
Many friends have unplanned pregnancy	
Agree	1.34 (0.71, 2.53)
Disagree	1.00 (Reference Group)
Not acceptable to have child out-of-wed	
Disagree	1.10 (0.64, 1.87)
Agree	1.00 (Reference Group)
<u>Personal</u>	
How important to avoid pregnancy	
Little/not important	5.21 (2.80, 9.69)*
Very important	1.00 (Reference Group)
Pregnancy will happen no matter what	

Characteristics	OR (95% CI)
Agree	1.02 (0.60, 1.72)
Disagree	1.00 (Reference Group)
Satisfied with current contraception method	
Dissatisfied	3.93 (1.67, 9.24)*
Satisfied	1.00 (Reference Group)
Using birth control is morally wrong	
Agree	2.73 (1.25, 5.97)*
Disagree	1.00 (Reference Group)
Have info to avoid pregnancy	
Somewhat agree/somewhat-strongly disagree	2.34 (1.38, 3.98)*
Strongly agree	1.00 (Reference Group)
Pregnancy should be planned	
Disagree	1.11 (0.47, 2.59)
Agree	1.00 (Reference Group)
Next 3 months how likely unprotected sex	
Likely	1.77 (1.04, 3.01)*
Not at all likely	1.00(Reference Group)

* Significant at p-value <0.05