Family Planning Practices among Women with Diabetes and Overweight and Obese Women in the 2002 National Survey for Family Growth

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**Objective:** To examine contraceptive practices among diabetic women and obese women.

**Research Design and Methods:** We analyzed the responses of 5,955 participants aged 20-44 years in the 2002 National Survey for Family Growth. Diabetes, BMI, desire for pregnancy, history of infertility treatment, sexual activity, parity, and demographic variables (age, race/ethnicity, education, marital status, income, insurance, and smoking) were obtained by self-report. Lack of contraception was defined as absence of hormonal, barrier, or sterilization based methods. Associations between contraception, diabetes, and BMI category were assessed in multivariable logistic regression models among non-sterile sexually active women.

**Results:** In unadjusted comparisons among sexually active women who were not sterilized, women with diabetes were more likely to lack contraception than women without diabetes (odds ratio [OR] 2.61, 95% CI 1.22, 5.58). Women with BMIs $\geq 35$ kg/m$^2$ were more likely to lack contraception compared to women with BMIs $< 25$ kg/m$^2$ (OR 1.63, 95% CI 1.16, 2.28), but associations between contraception use and lesser degrees of overweight and obesity were not significant. In multivariable models, women who were older ($\geq 30$ years vs. 20-29 years), non-Hispanic black race, were cohabitating, had a history of infertility treatment, and desired or were ambivalent about pregnancy were significantly more likely to lack contraception. The association between diabetes, BMI, and contraception were no longer significant after these adjustments.

**Conclusions:** Older women with diabetes and obesity who desire pregnancy, regardless of pregnancy intention, should be targeted for preconceptive management.
Diabetes and obesity increasingly affect women of reproductive age in the United States (1, 2). Data from the National Health and Nutrition Examination Survey show that the prevalence of physician-diagnosed diabetes in women aged 20 years and older was 7.1% from 2001-2004(3). Moreover in 2003-2004, one in three women aged 20 years or older were identified as obese (body mass index (BMI) $\geq 30 \text{ kg/m}^2$)(4). Women with diabetes and those who are obese are at increased risk for pregnancy complications, including those from surgical delivery and their offspring are at risk for congenital anomalies (5, 6). Women with diabetes can improve pregnancy outcomes by delaying pregnancy until optimal glucose levels are reached (7). Obese women are also at risk for gestational diabetes and future onset of diabetes (8, 9). Effective family planning, used in conjunction with glucose management for women with diabetes, as well as weight loss and diabetes screening prior to pregnancy, may reduce the risk to the mother and fetus associated with diabetes and obesity. In addition, family planning will reduce the risk of mistimed pregnancies (10).

Between one half and two thirds of women with diabetes have experienced unplanned pregnancies (11-14). However, Chuang and colleagues found that among sexually active women with diabetes, only a quarter reported no contraceptive use (15). Similarly, reports of contraceptive practices of obese women vary. While Chuang and colleagues found that one-fifth of potentially fertile obese women reported no contraceptive use (15), other reports have found much lower rates of contraception among obese women (16).

It is also not clear to what extent diabetes or obesity are independent risk factors for contraception non-use. The objective of this study was to examine contraceptive non-use and its associations with diabetes and categories of BMI using data from the 2002 National Survey for Family Growth (NSFG). We hypothesized that women with diabetes would report less contraceptive use than non-diabetic women, and that this difference would persist after adjustment for demographic factors and potential confounders such as desire for pregnancy, history of infertility treatment, and obesity. We also hypothesized that overweight and obese women would report less frequent contraceptive use than healthy-weight women after adjustment for potential confounders.

**RESEARCH DESIGN AND METHODS**

**Study Population:** The study population was drawn from the 2002 NSFG, a periodic survey designed and administered by the National Center for Health Statistics (NCHS). This survey is the principal source of U.S. national estimates of factors affecting pregnancy and birth rates, particularly contraceptive use and pregnancy, with oversampling of African-American women, Latinas, and teenagers. The 2002 survey was designed to obtain detailed information on factors affecting childbearing, marriage, and parenthood from a national probability sample of 12,571 non-institutionalized men and women 15 to 44 years of age (N=7643 non-pregnant women) (17). The survey was administered using computer-assisted personal interviewing. Trained interviewers asked participants questions and entered the responses into a notebook computer. A detailed description of the 2002 NSFG sample design and sampling weights is provided elsewhere (17).

Our sample was comprised of non-pregnant female respondents 20 to 44 years of age with recorded information on both diabetes status and BMI (N=5,955). As the appropriate method to assess weight for...
height persons less than 20 years of age (standardized growth curves for age) differs from the approach used to calculate BMI in adults, persons under 20 years of age were excluded from these analyses. For all multivariable analyses, our sample was further restricted to women who reported having sexual intercourse in the past four weeks and were not sterile (N=3,822). As this analysis was conducted on a de-identified public-use dataset, it was classified as exempt by the University of Michigan Institutional Review Board.

Dependent Variable: Our outcome of interest was contraceptive non-use at the time of interview. Participants were asked to list the types of contraceptive methods that they were using at the time of interview. Participants were classified as contraceptive non-users if they indicated that they were not using a contraceptive method at the time of interview. Contraceptive methods were categorized as hormonal (including birth control pills, injectables, implants, intrauterine devices, and the contraceptive patch), barrier (including the male condom, female condom, diaphragm, cervical cap, and sponge), or sterilization.

Independent Variables: Our primary exposures of interest were diabetes status and BMI. Diabetes status was ascertained based on responses to the following two questions: “has a doctor or other medical care provider ever told you that you had diabetes or ‘sugar?’” and “were you ever told you had diabetes when you were not pregnant?”(17) The first question was asked of all respondents. The second question was only asked to those who reported ever being pregnant and responded “yes” to being told that they had diabetes. Women were categorized as having diabetes if they answered “yes” to the first question (if never pregnant) or “yes” to both of these questions if they had ever been pregnant. Self-report of pre-existing (non-gestational) diabetes has a good concordance (k) of 0.8 when compared to medical record reviews, with a sensitivity of approximately 85% and specificity of 97%.(18)

All participants were asked to report their height and weight at the time of interview. Data cleaning was performed by the NCHS staff to account for some extremely high and low values reported for height and weight (based on the 5th and 95th percentiles). In particular, height for females was bottom-coded at 60 to indicate “60 inches or less” and top-coded at 70 to indicate “70 inches or more”. Weight for females was bottom- and top-coded at 108 pounds and 240 pounds, respectively.(17) For the purposes of this analysis, BMI was recoded as a categorical variable and consisted of the following levels: underweight or normal weight (< 25.0 kg/m²); overweight (25.0-29.9 kg/m²); class I obesity (30.0-34.9 kg/m²), and class II or III obesity (≥ 35 kg/m²). Of note, height is generally overestimated by an average of 0.5 inches and weight is generally underestimated. However, the correlation between measured weight and self-reported weight exceeded 0.90 and measured height and self-reported height was 0.92 in women in a population-based survey (19).

Statistical Analysis

Bivariate analyses were conducted to ascertain demographic characteristics of the study population and to document variations in family planning practices according to diabetes status and BMI category. The SURVEYFREQ procedure in SAS was used to perform these analyses, and the Rao-Scott modified chi-square test was applied to test for statistical significance at the p < 0.05 level.

The SURVEYLOGISTIC procedure in SAS was used to assess the effect of diabetes status and BMI category on the odds of contraceptive non-use in this study population. Potential confounders were included in the full model if they were risk
factors for contraceptive non-use and associated with diabetes and/or BMI based on a p-value < 0.20. These covariates included respondent age (20-29, 30-39, 40-44 years), race/ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic other, Hispanic), educational attainment (<12, 12, >12 years), total household income (<$20,000, $20,000-34,999, $35,000-49,999, ≥$50,000 annually), marital status (never married, cohabitating, married, separated/divorced/widowed), use of medical assistance to become pregnant (yes, no), and desire to become pregnant (yes, no, don’t know). The NSFG assessed pregnancy intention only in women who were not sterile. Among these women, pregnancy intention was assessed in married or cohabitating women and among single women expressing desire to have a pregnancy. Due to these different denominators, and the stronger association between desire and contraception than between intention and contraception reported in other analyses (20), we used desire for pregnancy in multivariate analysis although we reported both desire and pregnancy intention in unadjusted analysis. Only those covariates that changed the beta coefficient of either the diabetes or BMI variable by greater than 10% were retained in the final model for all analyses. For this analysis, the full and the final models remained the same.

All analyses were performed using SAS Version 9.1.3 for Windows (SAS Institute Inc., Cary, NC). For all analyses, the data were weighted to adjust for the survey design, sampling, coverage, and response rates so that accurate national estimates can be made from the sample. Thus, the findings presented can be generalized to all U.S. non-pregnant, non-institutionalized women 20-44 years of age.

RESULTS

The study sample consisted of 135 women with diabetes (2.3%) and 5820 women without the condition (97.7%). Women with diabetes were more likely to be older, of minority status, and to be separated, divorced, or widowed than women without diabetes (Table 1). Diabetic women reported higher rates of receiving medical help to become pregnant (13.0%) than women without diabetes (9.7%), although differences were not statistically significant. Additionally, diabetic women were slightly less likely to have been sexually active in the past four weeks and less likely to desire pregnancy, and were more likely to report surgical sterility than non-diabetic women. Diabetic women reported a higher percentage of contraceptive non-use (compared to non-diabetic women (38.8% vs. 27.3%, p <0.05).

Overweight and obesity were more common among older women than women aged 20-29 years, women who had less education, with lower income, and higher parity than women with BMIs < 25 kg/m². Obese and overweight women reported higher rates of treatment for infertility than women with BMIs < 25 kg/m² although these differences were not statistically significant. Overweight and obese women were slightly less likely to have been sexually active in the past four weeks and to desire pregnancy compared to women with BMIs < 25 kg/m². The association between BMI and current contraceptive method was statistically significant.

Among sexually active women who were non-sterile (N= 3822), the unadjusted odds of contraceptive non-use were 2.61 times higher in diabetic women than in non-diabetic women (95% CI, 1.22, 5.58) (Table 2). After adjusting for age, race/ethnicity, education, marital status, income level, receipt of medical assistance to become pregnant, desire to become pregnant, and BMI, the odds of contraception non-use decreased slightly in diabetic women and
were no longer statistically significant compared to women without diabetes (adjusted OR=1.84; 95% CI, 0.81, 4.19).

Similarly, the unadjusted odds of contraceptive non-use were higher among women with class II or III obesity, although not for overweight women or women with class I obesity. However, the association between class II or III obesity and lack of contraception did not persist after adjustment for confounders. Covariates such as higher age, non-Hispanic black race, history of medical assistance to become pregnant, and the desire to become pregnant were associated with lack of contraception, while higher educational attainment and a cohabitation living environment were associated with contraception use.

CONCLUSIONS

In this nationally representative, population-based survey of non-pregnant women, we found that approximately 40% of women with diabetes and up to a third of women with elevated BMIs did not use contraception. Among women who were sexually active and non-sterile, having diabetes was associated with more than a twofold greater odds of not using contraception while class II or III obesity, BMIs \( \geq 35.0 \text{ kg/m}^2 \), was associated with a 1.6-fold greater odds of not using contraception. However, after adjustment for confounders such as age, racial/ethnic group, education, history of fertility treatment, and desire for pregnancy, neither having diabetes nor being obese was significantly associated with contraceptive non-use. History of fertility treatment, desire for pregnancy, and ambivalence about pregnancy were associated with the greatest odds of not using contraception.

Previous studies of unplanned pregnancies suggest low rates of contraceptive use among women with diabetes, ranging from roughly a quarter to half (11-14). We found higher (although still suboptimal) rates of contraception use in this sample. The difference between our results and those from previous studies may be due to the fact that previous studies surveyed women who were pregnant at the time of interview while the NSFG sample we used only included women that were not pregnant at the time of the interview.

In the Behavioral Risk Factor Surveillance Study, Chuang and colleagues found similar rates of contraceptive use among women with diabetes to those that we documented (15). We also found that the majority of overweight and obese women used contraception, similar to their report (15). In our study, we further examined the relationship between severity of obesity and contraception and found that contraception use was significantly lower among women with severe (class II or III) obesity compared to women with lesser degrees of overweight and obesity. In other words, lesser degrees of obesity were not a risk factor for lack of contraception before or after adjustment for potential confounders.

Diabetes and severe obesity were not risk factors for lack of contraception after adjustment for other confounders including history of infertility treatment. Diabetes and obesity are associated with conditions inhibiting ovulation, such as polycystic ovary disease, thus inhibiting pregnancy and increasing the likelihood of infertility (21). In our analysis, treatment for subfecundity or infertility was associated with lack of contraception, presumably due to the assumption that contraception would not be needed (22). However, women may incorrectly perceive that they cannot become pregnant; approximately half of these women who were having regular intercourse reported not using birth control because they thought they could not get pregnant (22).

Desire for pregnancy and ambivalence about pregnancy were associated with greater...
risk of contraceptive non-use. While the obesity and diabetes literature has focused on unintended pregnancy, the family planning literature has since documented that desire for pregnancy is a better predictor of family planning practices than “intendedness” of pregnancy (23). Pregnancies may be unplanned but desired (20). This distinction may explain the lack of contraception in some women who do not intend a pregnancy immediately, and may explain why some women do not engage in recommended preconception practices, such as use of family planning until optimal glycemic control is reached. As women with diabetes were less likely to desire pregnancy than non-diabetic women, adjustment for this variable may have strengthened the association between diabetes and lack of contraception, although the association remained non-significant. Clinicians caring for women with diabetes and/or elevated BMIs may target women who desire pregnancy or who feel ambivalent about pregnancy for more intensive preconception management, even if these women do not intend to get pregnant. Such management may be more successful if focused on supportive measures and more intensive glucose control, rather than family planning (11).

As with other studies (22), we found that older women were at risk for lack of contraception, even after adjustment for other factors. We found that this was true of women aged 30-39 years of age as well as for women aged 40 years and older. While it is true that fertility declines with age, women in their thirties and early forties may still conceive spontaneously. It is possible that women believe that declines in fertility negate the need for contraception. We also found that African-American women were less likely to use contraception, even after adjustment for other potential confounders such as age, marital status, and education. Previous reports have speculated that these differences may be due to race-specific beliefs about the risks and benefits of different types of contraception, particularly hormonal contraception (24). Of note, cohabitation was also associated with greater contraception use, while marital status was not. While explanations are speculative, women who cohabit may have greater frequency of intercourse than their single counterparts, but also may have less social support for pregnancy than their married counterparts (22).

Strengths of this report include the population-based nationally representative sample and the available information on pregnancy desire, fertility treatment, previous pregnancy, and demographic variables, all of which are associated with contraceptive use. Limitations include little information on reasons for contraceptive non-use, particularly with respect to reasons specific to chronic disease, diabetes, and obesity. Additionally, we are unable to determine from the NSFG data how long women have had diabetes or whether they have type 1 or type 2 diabetes. Information about perceived risks of hormonal contraception for glucose control, intention to lose weight, ineligibility for particular methods, and lack of effectiveness of hormonal methods due to weight would have added to these analyses. Finally, the NSFG does not enquire after other factors related to healthcare delivery, such as usual source of care; it is possible that a lack of a usual source of care may serve as a barrier to the receipt of family planning services.

We conclude that the use of contraception is not optimal among women with diabetes and elevated BMI. However, our findings suggest that the lack of contraception in women in these high-risk groups is related to sociodemographic factors and other factors related to pregnancy and not these conditions per se. Efforts to improve family planning practices could address factors associated with contraceptive use,
particularly women’s beliefs about fecundity, specific to age and history of fertility treatment, as well as ambivalence about their desires for pregnancy. If future pregnancies are desired, preconception management may be more successful if daily folic acid use, weight management, and glycemic control are addressed in these clinical discussions instead of focusing solely on initiation of family planning, even if pregnancy is not immediately intended. Future research is needed that focuses on interventions targeting these factors, particularly in populations aged 30-39 years and women with diabetes, and interactions with healthcare delivery.

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Table 1. Characteristics of the study population (%), stratified by diabetes and body mass index, 2002 National Survey of Family Growth. N=5955

| Age (years) †‡ | Diabetes | Body Mass Index (BMI; kg/m²) |
|---------------|----------|-------------------------------|
|               | Yes (n=135) | No (n=5820) | Under/Normal BMI < 25.0 kg/m² (n=3028) | Overweight BMI 25.0 – 29.9 (n=1522) | Class I Obese BMI 30.0-34.9 (n=795) | Class II / III Obese BMI ≥ 35.0 (n=610) |
| 20-29         | 15.8      | 36.1            | 41.1          | 29.9          | 33.3          | 25.3          |
| 30-39         | 41.7      | 40.8            | 37.7          | 44.2          | 43.0          | 45.6          |
| 40-44         | 42.5      | 23.1            | 21.2          | 25.9          | 23.7          | 29.1          |

| Race and Hispanic Origin †‡ | Diabetes | Body Mass Index (BMI; kg/m²) |
|-----------------------------|----------|-------------------------------|
|                | Yes (n=135) | No (n=5820) | Under/Normal BMI < 25.0 kg/m² (n=3028) | Overweight BMI 25.0 – 29.9 (n=1522) | Class I Obese BMI 30.0-34.9 (n=795) | Class II / III Obese BMI ≥ 35.0 (n=610) |
| Non-Hispanic White         | 63.7      | 67.6            | 71.6          | 63.0          | 62.0          | 64.2          |
| Non-Hispanic Black         | 21.5      | 13.7            | 9.5           | 16.9          | 19.1          | 22.3          |
| Non-Hispanic Other         | 1.1 *     | 5.1             | 6.5           | 3.6           | 3.6           | 3.0           |
| Hispanic                   | 13.7      | 13.6            | 12.4          | 16.5          | 15.3          | 10.5          |

| Completed Years of Education ‡ | Diabetes | Body Mass Index (BMI; kg/m²) |
|-------------------------------|----------|-------------------------------|
|                               | Yes (n=135) | No (n=5820) | Under/Normal BMI < 25.0 kg/m² (n=3028) | Overweight BMI 25.0 – 29.9 (n=1522) | Class I Obese BMI 30.0-34.9 (n=795) | Class II / III Obese BMI ≥ 35.0 (n=610) |
| < 12                          | 13.9      | 15.0            | 13.2          | 17.1          | 15.5          | 18.6          |
| 12                            | 29.6      | 20.5            | 18.1          | 21.6          | 25.6          | 25.7          |
| > 12                          | 56.5      | 64.5            | 68.7          | 61.3          | 58.9          | 55.7          |

| Marital Status † | Diabetes | Body Mass Index (BMI; kg/m²) |
|------------------|----------|-------------------------------|
| Never Married    | 18.1     | 25.0            | 26.7          | 21.8          | 22.8          | 24.7          |
| Cohabiting       | 8.9      | 9.4             | 9.6           | 8.7           | 9.7           | 9.8           |
| Married          | 48.5     | 53.7            | 52.5          | 56.3          | 54.0          | 52.3          |
| Separated, Divorced or Widowed | 24.5 | 11.9        | 11.2          | 13.2          | 13.5          | 13.2          |

| Total Combined Income, 2001 ‡§ | Diabetes | Body Mass Index (BMI; kg/m²) |
|--------------------------------|----------|-------------------------------|
| < $20,000                      | 34.6     | 24.2            | 23.4          | 22.0          | 28.8          | 29.5          |
| $20,000 – $34,999              | 17.5     | 22.1            | 20.3          | 22.8          | 23.6          | 26.0          |
| $35,000 – $49,999              | 17.6     | 15.2            | 14.5          | 15.8          | 13.9          | 19.1          |
| ≥ $50,000                      | 30.2     | 38.5            | 41.7          | 39.3          | 33.6          | 25.4          |

| Health Insurance Coverage, 2001 | Diabetes | Body Mass Index (BMI; kg/m²) |
|---------------------------------|----------|-------------------------------|
| Private or Medi-Gap             | 69.3     | 70.8            | 73.5          | 70.3          | 66.6          | 63.5          |
| Medicaid, CHIP, or State- Sponsored | 14.4 | 9.1             | 7.6           | 8.9           | 12.3          | 14.4          |
| Other                           | 3.6 *    | 3.2             | 3.2           | 3.3           | 2.8           | 3.7           |
| Uninsured                       | 12.7     | 16.7            | 15.5          | 17.5          | 18.2          | 17.9          |
| Don’t know / Refused            | 0.0 *    | 0.1 *           | 0.1*          | 0.02 *        | 0.0 *         | 0.4 *         |

| Tobacco Use                     | Diabetes | Body Mass Index (BMI; kg/m²) |
|---------------------------------|----------|-------------------------------|
| Current (in past 12 months)     | 39.7     | 29.6            | 30.2          | 30.0          | 28.6          | 29.0          |
| Past                            | 10.4     | 11.8            | 11.3          | 10.7          | 14.1          | 14.4          |
| Never                           | 49.9     | 58.5            | 58.5          | 59.3          | 57.3          | 56.6          |

| Previously Pregnant † | Diabetes | Body Mass Index (BMI; kg/m²) |
|----------------------|----------|-------------------------------|
| Yes                  | 80.0     | 74.2            | 69.3          | 80.0          | 79.5          | 79.7          |
| No                   | 20.2     | 25.8            | 30.7          | 20.0          | 20.5          | 20.3          |

| Medical Help to Become Pregnant | Diabetes | Body Mass Index (BMI; kg/m²) |
|---------------------------------|----------|-------------------------------|
| Yes                              | 13.0     | 9.7             | 9.5           | 8.7           | 10.8          | 12.5          |
| No                               | 87.0     | 90.3            | 80.5          | 91.3          | 89.2          | 87.5          |

| Pregnancy Desire † | Diabetes | Body Mass Index (BMI; kg/m²) |
|---------------------|----------|-------------------------------|
| Yes                 | 41.7     | 49.8            | 52.0          | 46.4          | 49.3          | 45.9          |
| No                  | 57.8     | 47.7            | 45.4          | 51.4          | 48.1          | 52.1          |
| Don’t Know          | 0.5 *    | 2.5             | 2.6           | 2.2           | 2.6           | 2.0           |

| Pregnancy Intention ‡ | Diabetes | Body Mass Index (BMI; kg/m²) |
|-----------------------|----------|-------------------------------|
| Intend                | 62.7     | 63.5            | 65.4          | 61.3          | 58.6          | 64.3          |
| Don’t Intend          | 37.3     | 33.7            | 32.2          | 35.1          | 39.4          | 32.8          |
| Don’t Know | 0.0 * | 2.7 | 2.4 | 3.5 | 2.0 * | 2.9 * |
|---|---|---|---|---|---|---|
| Currently Sexually Active † ‡ | | | | | | |
| Yes | 77.2 | 87.1 | 88.1 | 87.7 | 86.0 | 79.7 |
| No | 22.8 | 12.9 | 11.9 | 12.3 | 14.0 | 20.3 |
| Current Contraceptive Methods ¶ | | | | | | |
| None † ‡ | 38.8 | 27.3 | 28.0 | 25.2 | 25.3 | 33.0 |
| Hormonal-based † ‡ | 15.3 | 26.4 | 29.3 | 24.8 | 23.7 | 16.5 |
| Barrier ‡ | 11.1 | 15.8 | 17.6 | 14.9 | 13.1 | 11.1 |
| Sterilization ‡ | 36.7 | 28.4 | 24.1 | 31.5 | 33.8 | 37.5 |
| Other † | 1.6 * | 7.9 | 7.1 | 9.9 | 8.5 | 5.6 |
| Female’s Sterility Status † ‡ | | | | | | |
| Not Sterile | 55.8 | 75.5 | 81.0 | 72.0 | 66.9 | 62.3 |
| Surgically Sterile | 36.3 | 22.3 | 16.7 | 26.1 | 31.0 | 34.3 |
| Non Surgically Sterile | 7.9 | 2.2 | 2.3 | 1.9 | 2.1 | 3.4 |
| Partner’s Sterility Status | | | | | | |
| Not Sterile | 91.4 | 86.2 | 84.5 | 88.3 | 89.4 | 86.4 |
| Surgically Sterile | 5.0 * | 12.7 | 14.3 | 10.9 | 9.0 | 12.1 |
| Non Surgically Sterile | 3.6 * | 1.1 | 1.2 | 0.8 * | 1.6 * | 1.5 * |

* Unweighted frequency was less than 10.
† Rao-Scott Chi-Square Test, p < 0.05, for diabetes.
‡ Rao-Scott Chi-Square Test, p < 0.05, for BMI.
§ Data available for 5,664 (95%) of respondents.
‖ Eligible respondents were physically able to have children.
¶ Respondents could select up to three methods. Percentages do not sum to 100.
Table 2. Unadjusted and adjusted odds ratios and 95% confidence intervals for contraceptive non-use among women at risk for pregnancy

| Age (years)     | Unadjusted Odds Ratio (95% Confidence Intervals) | Adjusted * Odds Ratio (95% Confidence Intervals) |
|-----------------|--------------------------------------------------|--------------------------------------------------|
| 20-29           | 1.00                                             | 1.00                                             |
| 30-39           | 1.18 (0.98, 1.42)                                | 1.47 (1.19, 1.82)                                |
| 40-44           | 1.40 (0.90, 2.17)                                | 2.61 (1.61, 4.22)                                |
| Race and Hispanic Origin |                                               |                                                 |
| Non-Hispanic White | 1.00                                             | 1.00                                             |
| Non-Hispanic Black | 1.90 (1.48, 2.44)                                | 1.76 (1.34, 2.30)                                |
| Non-Hispanic Other | 0.99 (0.68, 1.46)                                | 1.07 (0.74, 1.55)                                |
| Hispanic | 1.37 (1.02, 1.83) | 1.19 (0.90, 1.59) |
| Completed Years of Education |                                           |                                                 |
| < 12            | 1.03 (0.68, 1.55)                                | 1.01 (0.66, 1.54)                                |
| 12              | 1.00                                             | 1.00                                             |
| > 12            | 0.61 (0.43, 0.86)                                | 0.56 (0.38, 0.82)                                |
| Marital Status  |                                                 |                                                 |
| Never Married   | 1.00                                             | 1.00                                             |
| Cohabitating    | 0.74 (0.52, 1.04)                                | 0.67 (0.47, 0.96)                                |
| Married         | 0.88 (0.68, 1.14)                                | 0.80 (0.61, 1.05)                                |
| Separated, Divorced or Widowed | 1.35 (0.98, 1.86) | 1.09 (0.77, 1.53) |
| Total Combined Income, 2001 |                                           |                                                 |
| < $20,000       | 1.00                                             | 1.00                                             |
| $20,000 – $34,999 | 0.77 (0.60, 0.99)                                | 0.86 (0.66, 1.12)                                |
| $35,000 – $49,999 | 0.83 (0.49, 1.40)                                | 0.89 (0.56, 1.43)                                |
| ≥ $50,000       | 0.68 (0.51, 0.89)                                | 0.73 (0.54, 1.00)                                |
| Medical Help to Become Pregnant |                                           |                                                 |
| Yes             | 3.14 (2.37, 4.18)                                | 3.32 (2.35, 4.70)                                |
| No              | 1.00                                             | 1.00                                             |
| Pregnancy Desire |                                                 |                                                 |
| Yes             | 1.54 (1.17, 2.03)                                | 2.27 (1.79, 2.88)                                |
| No              | 1.00                                             | 1.00                                             |
| Don’t Know      | 1.51 (0.63, 3.60)                                | 2.20 (1.05, 4.59)                                |
| Diabetes Status |                                                 |                                                 |
| Diabetic        | 2.61 (1.22, 5.58)                                | 1.84 (0.81, 4.19)                                |
| Non-diabetic    | 1.00                                             | 1.00                                             |
| Body Mass Index (BMI) |                                           |                                                 |
| BMI < 25.0 kg/m² | 1.00                                             | 1.00                                             |
| BMI 25.0 – 29.9 kg/m² | 1.03 (0.80, 1.32) | 0.91 (0.68, 1.20) |
| BMI 30.0 – 34.9 kg/m² | 1.05 (0.79, 1.39) | 0.89 (0.66, 1.19) |
| BMI ≥ 35.0 kg/m² | 1.63 (1.16, 2.28) | 1.30 (0.87, 1.94) |

* Models were adjusted for all variables shown in this table.