Sexual Behavior and Contraceptive Use among 18- to 19-Year-Old Adolescent Women by Weight Status: A Longitudinal Analysis

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Objective To describe the association between weight status and sexual practices among 18- to 19-year-old women.

Study design We analyzed a population-based longitudinal study of 18- to 19-year-old women residing in a Michigan county at cohort inception. Weekly journal surveys measured sexual practices, including contraceptive behaviors. Outcomes included proportion of weeks with a partner, proportion of weeks with sexual intercourse, number of partners, average length of relationships, proportion of weeks with contraception use, and proportion of weeks where contraception was used consistently. We examined 26 545 journal surveys from 900 women over the first study year. Ordinary least squares regression models for each outcome examined differences by weight status, controlling for sociodemographic characteristics.

Results The mean proportion of weeks in which adolescents reported sexual intercourse was 52%; there was no difference by weight status. Among weeks in which adolescents reported sexual activity, obese adolescents had a lower proportion of weeks where any contraception was used compared with normal weight adolescents (84% vs 91%, $P = .011$). Among weeks in which adolescents reported sexual activity and contraceptive use, obese adolescents had a lower proportion of weeks with consistent contraceptive use (68% vs 78%, $P = .016$) and oral contraceptive pill use (27% vs 45%, $P = .001$) compared with normal weight adolescents. All other relationships by weight status were not statistically significant.

Conclusions In this longitudinal study, obese adolescent women were less likely to use contraception, and less likely to use it consistently when compared with normal weight peers. Findings suggest obesity may be an important factor associated with adolescent women's sexual behavior. *(J Pediatr 2015;167:586-92)*.

The US adolescent pregnancy rate is one of the highest in the developed world.[1] One-quarter of all US women become pregnant at least once by age 20 years[2] with 18- and 19-year-olds at the highest risk for pregnancy.[3] The consequences of adolescent pregnancy and childbearing are serious and numerous. Pregnant adolescents are more likely to experience miscarriage, stillbirth, and neonatal death, as well as to live in poverty and to rely on public assistance than women who delay childbearing.[4,5]

Reducing adolescent pregnancy is a national public health priority.[6] To do so, we must identify the characteristics of adolescents who are at high risk for pregnancy by understanding adolescents' sexual and contraceptive behaviors. Studies describing the sexual behaviors of adolescents have commonly done so by stratifying by age, race/ethnicity, and socioeconomic status. With over one-fifth of US adolescents currently obese, studies have also explored the relationship between weight status and sexual behaviors.[7] However, the relationship between weight status and sexual behaviors such as contraceptive use remains unclear for adolescent women at highest risk for unintended pregnancy.

Among studies of sexual activity and weight status, some have shown that obese adolescent women have a higher likelihood for risky sexual behavior such as casual sex, multiple partners, sex without contraception, or sex under the influence of drugs or alcohol.[8-10] Some studies have shown that obese adolescents are less likely to be sexually active overall,[10,11] while other studies show no difference in sexual behaviors by weight status.[12,13] Among studies that specifically studied contraceptive use and weight status, one study showed that obese women age 18-44 years were less likely to use contraceptives than normal weight women, and several studies showed no difference in contraceptive use by weight status.[14,15] Furthermore, nearly all studies to date have been cross-sectional, several analyze a wide age group without a focus on those at greatest risk (18- to 19-year-olds), and many contain only basic information regarding sexual activity and contraceptive

BMI	Body mass index
OLS	Ordinary least squares
RDSL	Relationship Dynamics and Social Life

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use (eg, "Did you ever have sex?" and "Do you use contraception/condoms?"). As a result, there is a need for additional investigation to clarify how weight status affects sexual behaviors.

Understanding sexual behaviors by weight status among adolescents is vital because of the significant adverse maternal and fetal outcomes that are associated with obesity. Obese pregnant women are at increased risk for gestational diabetes, hypertensive disorders, thromboembolic complications, operative delivery, late stillbirth, birth injury, and their infants' admission to neonatal intensive care.[16-23] Furthermore, women who have given birth as adolescents are also at an increased risk for obesity and its associated comorbidities later in life, which likely contribute to a cycle of poor health among at-risk adolescents and their children.[24-27]

To fill this gap, the aim of our study was to use longitudinal data to examine the relationship between weight status (normal weight vs overweight and normal weight vs obese) and specific sexual behaviors (length of relationships, frequency of sex, number of partners, use of specific types of contraception) among a population-based sample of 18- and 19-year-old adolescent women.

Methods

The Relationship Dynamics and Social Life (RDSL) study began with a representative, random, population-based sample of 1003 heterosexual young women, ages 18-19 years at time of study inception, residing in a sociodemographically diverse Michigan county. They were followed weekly for 2.5 years. The sampling frame was the Michigan Department of State driver's license and Personal Identification Card database. The Institutional Review Board of the University of Michigan approved this study.

The RDSL study focused on women ages 18-19 years because these ages are characterized by the highest rates of unintended pregnancy, which is the research focus of the RDSL study.

A 60-minute, face-to-face baseline survey interview was conducted by trained research staff between March 2008 and July 2009 to assess sociodemographic characteristics, self-reported anthropometric measurements including height and weight, attitudes, relationship characteristics, contraceptive use, and pregnancy history. At the conclusion of this baseline interview, respondents were invited to participate in a weekly journal-based survey where they were asked to report on their thoughts and behaviors from the previous 6-7 days. For each journal interview, respondents could elect to complete the journal on the Internet or with an interviewer by phone, which prospectively measured pregnancy desires and pregnancy, as well as relationship characteristics such as commitment, sex, and contraceptive use. The journal portion of the study concluded in January 2012. Respondents were paid $1 per weekly journal with $5 bonuses for on-time completion of 5 weekly journals in a row. We refer to the period between journals as a "week," though it may vary from 5-13 days because of variations in when respondents completed journals. If journals were completed after 13 days, respondents referred only to the prior week when responding to journals.[28]

The response rate for the full baseline interview was 88%; 79% of women completed 12 months or more of weekly surveys. We restricted our analyses to respondents who completed journals during the first 12 months of the study, when response rates were the highest. However, analysis of journals from the full 2.5 years of the study found no significant difference in our findings. This resulted in 900 respondents who contributed 26 545 weeks of data. The mean number of journals for women in the first 12 months is 30.34 (median = 34). To focus on women at risk for unintended pregnancy, we eliminated the small number of weeks in which the respondents were pregnant during the study period (<1% of weeks in which sex occurred). This focused our analysis on women who were most in need of contraception. We also conducted sensitivity analyses for the contraception models that excluded weeks in which the respondent had a strong desire to become pregnant (and no desire to avoid pregnancy). The results did not differ from those presented.

Body Mass Index

Body mass index (BMI) was calculated with a standard equation using respondents' self-reported height and weight.[29] Consistent with other studies of older adolescents, weight status in our study was determined using adult BMI ranges (normal weight = BMI 18.5-24.9 kg/m^2, overweight = BMI 25.0-29.9 kg/m^2, obese = BMI ≥30 kg/m^2).[30,31] Underweight adolescents were excluded, as they were not the focus of this study and also because of the very low prevalence within our sample (4.9%).

Relationships and Sexual Intercourse

Each week, respondents identified their most important partner during the past week. Note that "partner" refers to anyone the respondent considered "special" or "romantic," or anyone with whom she had sexual contact during the prior week, which could include a texting "pen-pal," a 1-night stand, a fiancée, or anyone in-between.

Proportion of weeks in a relationship was calculated by dividing the number of weeks in which the respondent identified a partner by the total number of weekly interviews.

We computed the proportion of weeks in which sex occurred among those weeks when a respondent identified a partner. In each week, the respondent identified a partner, she was asked whether she had sexual intercourse ("…did you have sexual intercourse with ___? By sexual intercourse, we mean when a man puts his penis into a woman's vagina.").

Total number of partners was calculated by counting the number of unique partners reported.

Average length of relationships (in months) was calculated by summing the number of days with each unique partner, converting this to months (1 month = 30.4 days, the average number of days in a month), and dividing by the number of partners.