Socioeconomic, Anthropomorphic, and Demographic Predictors of Adult Sexual Activity in the United States: Data from the National Survey of Family Growth

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Abstract

Introduction—Individuals who engage in regular sexual intercourse are more likely to report good overall quality of life. Studies of sexuality in adolescents have focused on high-risk behaviors whereas similar studies in older adults have focused on sexual dysfunction. Given a paucity of data on the sexual behaviors of young adults and the possibility of important relationships between sexuality and overall health, we sought to determine factors that influence the frequency of intercourse in adult men and women in the United States.

Aim—To identify factors related to coital frequency in young and middle-aged adults.

Methods—We analyzed data from the male and female sample of the 2002 National Survey of Family Growth to examine frequency of sexual intercourse among Americans aged 25–45 years (men: N = 2,469; women: N = 5,120).

Main Outcome Measures—Multivariable negative binomial regression modeling was used to test for independent associations between the frequency of sexual intercourse and demographic, socioeconomic, and anthropometric variables.

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Results—In this study, men and women between the ages of 25 and 45 have sex a mean 5.7 and 6.4 times per month, respectively. Being married significantly increased coital frequency for women but has no effect on male coital frequency. Increased height, less than high school education, and younger age were predictive of increased sexual frequency in men. Pregnancy was associated with significantly lower coital frequency for both men and women. No association was shown between self-reported health status and coital frequency on multivariable analysis.

Conclusions—Among young male adults, coital frequency is associated with specific socioeconomic, demographic, and anthropomorphic characteristics. Sexual frequency in women does not appear to be influenced by such factors. Self-reported health is not predictive of sexual activity in this age group.

Introduction

The fundamental importance of sex is rooted in the need for procreation and species propagation [1]. In humans, sexual expression is also important as a source of physical pleasure and emotional intimacy. Healthy sexual expression has been linked to happiness, health, and overall quality of life in both men and women [2,3]. Indeed, a lack of sexual activity can be a predictor of depression and marital disharmony [3–7].

In addition to emotional or psychological health, many studies have linked intercourse frequency to physical health [7,8]. Increased sexual frequency has been associated with a protective effect against cardiovascular disease as assessed by carotid intimal thickness, fatal myocardial infarctions, and heart rate variability [8–10]. Increased prostate carcinogenesis has also been linked to lower sexual activity [11]. Other studies have even suggested an association between sexual activity and overall mortality [12,13].

Given the clear associations between sexual activity and quality of life, there has been great interest in sociodemographic and anthropomorphic factors that predict frequency of sexual activity. The existing data on predictors of sex frequency have been somewhat conflicting. Although marriage or cohabitation is generally associated with increasing sexual frequency, progressively longer relationship duration and aging are associated with declining coital frequency [14–16]. Whereas some studies have linked race and ethnicity to sexual activity [11,17,18], other studies have not found such associations [14,16].

The majority of studies examining sexuality and health/quality of life have focused on an older population. It is unknown if coital frequency is predictive of general health status in a young adult population. Using data from cycle 6 of the National Survey of Family Growth, we sought to examine associations between sexual frequency in young and middle aged adults and determine which (if any) health, sociodemographic, or anthropomorphic factors are related to coital frequency.

Materials and Methods

Study Population

We analyzed data from Cycle 6 (2002) of the National Survey of Family Growth (NSFG). Trained staff conducted interviews in selected families' homes between March 2002 and February 2003. In all, 4,928 men and 7,643 women representing the population of the United States living in households were surveyed. The NSFG is a multistage probability sample designed to represent the household population of U.S. women and men aged 15–45 years. Within in each household, one member within the required age range was randomly selected for recruitment. Certain groups, including black and Hispanic adults, were sampled at higher rates to achieve adequate samples for generating nationally representative point estimates and power to examine differences between racial and ethnic groups. In order to maintain privacy only a single member of a given household was asked to participate. In addition, several of the more sensitive questions administered including sexual practices and drug use were asked via computer and headphones to give the respondent additional privacy. All subjects provided written consent for participation. The survey is available in both English and Spanish. The overall response rate for the survey was 79% [19]. We limited our analysis to participants' ages 25 to 45 years who reported ever having had heterosexual intercourse. Institutional Review Board review was not required for this secondary analysis of a de-identified national data set.

Description of Variables

Outcome—Sexual frequency among surveyed men was determined by asking: "Now please think about the last four weeks. How many times have you had sexual intercourse with a female in the last four weeks?" For women, surveyors asked, "Now please think about the last four weeks. How many times have you had sexual intercourse with a male in the last four weeks?" As the sexual frequency only pertained to heterosexual encounters, respondents who self-identified as homosexual were excluded from all analyses. Participants who did not answer the question were excluded from all subsequent analyses.

Exposure—Demographic, socioeconomic, and anthropomorphic characteristics were analyzed to assess associations with coital frequency. All potential mediating and confounding variables were selected a priori. Variables were selected based on items in the literature found to be associated with coital frequency in adolescents and adults. Variables analyzed included age (continuous), self reported health status (dichotomous—excellent, very good, or good vs. fair or poor), current marital status (dichotomous—yes/no), currently pregnant (self for women, partner for men; dichotomous—yes/no), self-reported race/ethnicity (white, black, Hispanic, Asian, other), education level (categorical—less than high school, high school/GED, more than high school), income level (categorical variable in $25,000 intervals), religious affiliation (Catholic, Protestant, none, other), height (continuous), and calculated body mass index (BMI; continuous).

Data Analysis

We developed our multivariate model to assess sexual frequencies in American adults aged 25–45 years a priori based on existing literature. We did not select predictors for inclusion

based on bivariable screening as important confounding can potentially be missed using this methodology [20]. All analyses accounted for the complex survey design of the NSFG. Initially models were run with linear regression using sexual frequency as the outcome. However, analysis of sexual frequency revealed this variable was skewed and overdispersed (i.e. variance > mean). Negative binomial regression is appropriate in cases with overdispersed count data [21], as is the case with coital frequency. We report incidence rate ratios (IRRs) and their 95% confidence intervals (CIs) to estimate the association between sexual frequency and other variables for multivariable evaluation. As pregnancy alters a women's BMI, this variable was excluded from the multivariable model when determining the IRR for pregnancy. For sensitivity analysis, the models were repeated using linear regression, Poisson regression and ordinal logistic regression techniques (with monthly sexual frequency categories of 0, 1–4, 5–8, and 9+) with no meaningful changes in the conclusions. Although the data is right skewed and not normally distributed, the complex survey design, including over-sampling of some groups, precluded calculating median sexual frequencies. Thus means and 95% confidence intervals are presented. All tests were two-sided; a *P* value of 0.05 was considered statistically significant. All calculations were performed using Stata 10 (StataCorp LP, College Station, TX, USA).

Results

Males

Men aged 25–45 years reported intercourse 5.7 (95% CI 5.3–6.1) times per month or approximately 68 times per year when averaged over 12 months. On a bivariable analysis, age, race, education, and partner's pregnancy status affect coital frequency in men (Table 1). After controlling for socioeconomic, demographic, and anthropomorphic characteristics, age was inversely associated with sexual frequency (IRR 0.82, 95% CI 0.80–0.94 for each 5-year increase in age). Having children was did not significantly affect sexual frequency (*P* = 0.65); however, pregnancy in a female partner significantly reduced the monthly coital rate (IRR 0.60, 95% CI 0.49–0.73). Men who had completed high school or more had significantly lower coital frequency compared with men who had not (IRR 0.68, 95% CI 0.51–0.98 (comparing <HS with HS). For each six inch increase in height, men reported a 15% increase in monthly sexual frequency (IRR 1.15, 95% CI 1.00–1.32). There was a trend toward association between higher BMI and decreasing coital frequency (0.93, 95% CI 0.85–1.01 for each 5-unit increase in BMI), but this value did not reach statistical significance (*P* = 0.08). Hispanic men reported a 22% increase rate of monthly intercourse compared with white men (IRR 1.22, 95% CI 1.00–1.48), and there was a trend toward a lower intercourse rate for Asian men (*P* = 0.08). Self-reported health status was not associated with intercourse frequency (*P* = 0.14, Table 2).

Females

Women aged 25–45 years reported intercourse 6.4 (95% CI 6.1–6.6) times per month or approximately 76 times per year when averaged over 12 months. Marital status, race, religion, income, motherhood, and pregnancy status affect a women's sexual frequency on bivariable analysis (Table 3). On multivariate analysis, being married significantly increased coital frequency in women (IRR 1.13, 95% CI 1.03–1.25). Current pregnancy significantly

lowered reported sexual frequency (IRR 0.75, 95% CI 0.62–0.91). No anthropomorphic characteristics (height, BMI) predicted female sexual frequency. Although it did not reach statistical significance, there was an inverse trend between age and sexual frequency (IRR 0.97, 95% CI 0.93–1.00 for each 5-year increase in age, $P = 0.08$). Self-reported health status in women was not associated with intercourse frequency ($P = 0.37$, Table 4).

Discussion

Our analysis found that there is variation in coital frequency in young and middle-aged American adults; variation appears to be associated with a number of defined socioeconomic, demographic, and anthropomorphic factors that differ between men and women. Although socioeconomic status did not influence sexual frequency among women, men with less than a high school education tended to have more frequent intercourse than men who had graduated high school. Marriage was associated with increased coital frequency in women but was not associated with coital frequency in men. Coital frequency declined when a couple was pregnant but was unaffected by parenthood. A man's height was predictive of the number of sexual encounters per month. Self-reported health status was not predictive of sexual frequency.

To our knowledge, few recent studies have explored coital frequency in young adults. Billy et al. used a population based survey to examine men aged 20–39 years in 1991 and found that frequency of coital intercourse was positively associated with being married (monthly sex frequency 1.4 in unmarried and 4.9 in currently married men) [14]. The National Health and Social Life Survey (NHSLS) was conducted in 1992 and surveyed over 3,000 men and women between ages 18–59 years and found that Americans had sex about 58 times per year (nearly five times per month) a rate that declined with age [18]. More recently, Ferguson et al. also employed a survey to examine residents and fellows (mean age 29 years) in medical training programs at Washington University and found a mean monthly sexual frequency of 6 for men and 5 for women [22]. A similar study by the same authors in a slightly younger (mean age 24.5) population of medical students at the same institution reported a mean monthly sex frequency of 8 and 6 for men and women, respectively [23]. These studies of a select population of highly educated individuals are likely not representative of the general population but provide some contextual information on sexual frequency in this age range.

Premature ejaculation (PE) surveys on adult men have reported sexual frequency rates of approximately 9–10 times over 4 weeks [24,25]. In these studies, diary entries recorded each sexual event prospectively thus eliminating recall bias. The higher rates of coital frequency compared with the NSFG may be explained both by volunteer bias, which selected for a population more likely to have intercourse, as well as study subjects' desire to increase their own sexual frequency knowing it was being measured. Indeed, just as the position and velocity of a microscopic particle cannot be simultaneously known, it's possible that the monthly sexual frequency and identity of a person cannot be precisely known. In the process of prospectively measuring coital frequency, the rate itself may be altered.

Duberstein et al. recently examined the cycle 6 of the NSFG to report sexual behaviors of single adult women. In this descriptive study, race, age, and education were examined; but

multivariable modeling was not used to explore the interactions between variables [26]. Sexual activity was found to decline with age and education but increase with marriage. Lindau et al. explored sexual habits of older adults (57–85 years old) and found sexual activity declined with increasing age and declining health [3].

An inverse relationship between coital frequency and age has been previously reported [2,3,14,18,27]. Interestingly, in our cohort of young and middle-aged adults, self-reported health status was not predictive of the frequency of sexual activity in either men or women. This finding is in contrast to reports in older adults, in whom poor health and/or medical ailments have been shown to inhibit sexual function. It is possible that the respondents in this current investigation of young people had minor (if any) health problems that did not manifest in the bedroom as a decline in sexual frequency. Indeed, Laumann et al. showed that the odds of ED among 60–80 years olds was 2.2 times compared with that of 40-to 49-year olds [28]. A similar trend was noted in women for lubrication difficulties, whereby 60- to 80-year-old women had 2.6 times the odds of lubrication difficulties compared with 40- to 49-year-old women.

Although marriage increased reported coital frequency in women, it did not affect coital frequency for men. Seidman et al. have previously reported that adult single women are more likely to be abstinent than their unwed male counterparts [27]. Smith et al. reported higher annual sexual frequency among married persons (67 times) relative to never married or divorced individuals (55 times) for both men and women [29]. The NHSLS also finds a consistent relationship between marriage and cohabitation and sexual activity [18]. When examining men and women over the age of 60 years, sexual activity becomes highly dependent on being in a relationship later in life [3]. It appears that in younger women sexual activity is also dependent on relationship status. A possible explanation for the lack of association between a man's relationship status and sexual frequency is that the current study simplified an individual's relationship status to include only marital status and not cohabitation status.

There was a positive association between height and coital frequency in men, whereas no such association was seen in women for any anthropomorphic characteristics. The rationale for this finding cannot be definitively determined from these data, but it may be theorized that taller men may be perceived as more attractive and thus have an increased opportunity for intercourse. Interestingly, body mass index showed a trend toward a negative association with sexual frequency for men ($P = 0.08$). This finding is supportive of a prior report by Halpern et al. stating that there is an inverse relationship between sexual experience and body mass indices among men and women aged 18–27 years; this group theorized that thinner individuals were typically seen as more attractive and thus had greater opportunity to engage in sexual activity [11].

Socioeconomic status was assessed using both income level and educational attainment. Men had a decreasing rate of coital frequency with education beyond the high school level. In women, although there was an inverse association between education and sexual frequency on bivariable analysis, on multivariable modeling the association disappeared, suggesting that other factors confounded this effect. Some groups have shown an inverse

relationship between socioeconomic status and sexual activity similar to what we have observed [11,26], whereas others have not reported such a relationship [14]. In fact, Laumann et al. showed that higher educational attainment and social status were associated with better sexual function [2]. This group hypothesized that lower levels of stress and improved health maintenance in individuals with greater educational achievement lowers the incidence of sexual dysfunction in both men and women. Our data is consistent with data from younger cohorts where lower socioeconomic status predicts increases in sexual activity.

Our data showed an increased rate of monthly intercourse for Hispanic men compared with the Caucasian reference category. Other groups have reported differences between African American, Hispanics, Asian Americans, and Caucasians have been shown in regards to sexual activity, coital debut, and number of sexual partners suggesting a cultural aspect to coital frequency [17,26,30–33].

Certain limitations of this study merit mention. The NSFG is a cross-sectional study that surveys participants at a single point in time. Although race will remain constant, other variables such as educational level or income could conceivably change with time. Caution must be exercised in extrapolating data from a study and applying them to the entire body of young adults in the United States. The use of self-reported measures of physical health may not be entirely accurate. In addition, sexual experience as recorded in this study may be subject to recall bias or even intentional exaggeration or misrepresentation by certain participants. Furthermore, the survey did not assess if participants were distressed about their sexual activity and/or frequency. Such insights may be the topic of future research. Next, the heteronormative phrasing of the question on sexual intercourse excluded individuals who engage in sexual activity with a partner(s) of the same gender. In addition, the current analysis examined only marital status to assess an individual's relationship status. Relationship length, cohabitation status, and the other intricacies of relationship status can affect sexual frequency and should be a topic of future research [18,34]. Although these limitations must be considered when interpreting these data, we believe that this study does suggest important variables that may be related to sexual frequency in young, heterosexual American adults.

Conclusions

Based on our data, American men and women between the ages of 25 and 45 years have sex a mean of 5.7 and 6.4 times per month, respectively. The socioeconomic, anthropomorphic, and demographic characteristics that predict intercourse frequency differ between men and women. Health factors do not appear to play a substantial role in predicting intercourse frequency in this age group.

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Table 1

Heterosexual coital frequency among men aged 25–45 years

Characteristic		N	%	Mean	95% confidence interval		P value
Age	25–29	514	20.1%	6.81	6.07	7.56	<0.01
	30–34	584	24.4%	6.30	5.65	6.96	
	35–39	609	26.8%	5.11	4.63	5.58	
	40–45	592	28.7%	4.83	4.01	5.64	
Married	No	1,170	31.7%	5.31	4.66	5.97	0.23
	Yes	1,129	68.3%	5.81	5.36	6.26	
Race	White	1,113	65.5%	5.23	4.74	5.73	<0.01
	Black	485	11.3%	5.70	4.95	6.44	
	Hispanic	574	16.8%	7.40	6.36	8.43	
	Asian	70	3.1%	4.05	2.67	5.44	
	Other	57	3.4%	6.83	4.04	9.62	
Education	<High School	393	14.3%	6.91	5.65	8.16	0.02
	High School	1,193	51.7%	5.70	5.23	6.17	
	>High School	713	34.0%	5.13	4.58	5.68	
Income	$0–24,999	693	22.6%	6.12	5.18	7.06	0.34
	$25K–49,999	800	34.5%	5.68	5.15	6.21	
	$50K+	806	43.0%	5.44	4.98	5.90	
Religion	None	394	15.6%	6.19	5.12	7.25	0.08
	Catholic	712	28.9%	6.24	5.44	7.04	
	Protestant	991	46.3%	5.31	4.82	5.80	
	Other	202	9.3%	4.88	3.74	6.02	
Height	68″	772	30.2%	5.65	5.01	6.30	0.60
	69″–70″	455	20.5%	5.89	4.95	6.83	
	71″–73″	673	30.7%	5.30	4.68	5.92	
	74″	379	18.6%	6.05	5.23	6.87	
BMI	18	27	0.8%	7.00	−19.25	33.26	0.13
	19–24	626	26.4%	6.12	5.12	7.11	
	25–29	946	42.1%	5.35	4.92	5.78	
	30	672	30.7%	5.68	5.07	6.29	
Children	No	750	25.0%	5.22	4.57	5.88	0.16
	Yes	1,549	75.0%	5.80	5.36	6.25	
Currently pregnant	No	850	91.7%	6.17	5.68	6.65	<0.01
	Yes	77	8.3%	4.11	2.92	5.30	
Health	E/VG/G	2,137	93.6%	5.74	5.35	6.12	0.14
	F/P	152	6.5%	4.76	3.54	5.98	
Total		2,299		5.67	5.30	6.05	

Percentages account for complex survey design in which certain groups are oversampled in order to obtain adequate subjects for analysis. *P* values represent bivariable negative binomial regression

BMI = body mass index; E/VG/G = Excellent/Very Good/Good; F/P = Fair/Poor.

Table 2

Multivariate negative binomial regression analysis examining the coital frequency in U.S. men aged 25–45 years old (participants with complete data analyzed, N = 877)

Characteristic		IRR	95% confidence interval		P value
Age	5 years	0.86	0.80	0.94	<0.01
Married	Yes vs. no	0.88	0.69	1.13	0.31
Race	White	Reference	Reference	Reference	Reference
	Black	1.08	0.85	1.35	0.53
	Hispanic	1.22	1.00	1.48	0.05
	Asian	0.77	0.58	1.03	0.08
	Other	1.08	0.58	1.99	0.80
Education	<High School	Reference	Reference	Reference	Reference
	High School	0.66	0.50	0.88	0.01
	>High School	0.66	0.49	0.89	0.01
Income	$0–24,999	Reference	Reference	Reference	Reference
	$25K–49,999	0.91	0.70	1.19	0.49
	$50K+	0.96	0.73	1.27	0.79
Religion	None	Reference	Reference	Reference	Reference
	Catholic	0.93	0.71	1.22	0.60
	Protestant	0.89	0.71	1.12	0.32
	Other	0.71	0.51	0.99	0.05
Height	6″ increase	1.15	1.00	1.32	0.04
Body mass index	5 unit increase	0.93	0.85	1.01	0.08
Children	Yes vs. no	0.96	0.81	1.14	0.65
Currently pregnant	Yes vs. no	0.60	0.49	0.73	<0.01
Health	Good vs. Bad	0.74	0.50	1.11	0.14

IRR = incidence rate ratio.

Table 3

Heterosexual coital frequency among women aged 25–45 years

Characteristic		N	%	Mean	95% confidence interval		*P* value
Age (years)	25–29	1,228	21.8	6.92	6.30	7.54	0.22
	30–34	1,317	24.5	6.17	5.80	6.55	
	35–39	1,233	26.0	6.22	5.70	6.74	
	40–45	1,173	27.8	6.22	5.63	6.80	
Married	No	2,238	36.7	5.91	5.46	6.37	0.02
	Yes	2,713	63.3	6.59	6.27	6.91	
Race	White	2,660	67.4	6.39	5.99	6.78	<0.01
	Black	1,034	13.4	5.74	5.04	6.44	
	Hispanic	1,029	14.2	7.27	6.60	7.93	
	Asian	134	2.7	5.12	4.06	6.18	
	Other	94	2.2	5.09	3.49	6.69	
Education	<High School	683	11.7	6.72	6.03	7.41	<0.01
	High School	2,479	50.7	6.70	6.27	7.12	
	>High School	1,789	37.6	5.82	5.42	6.21	
Income	$0–24,999	1,667	28.7	6.27	5.82	6.73	<0.01
	$25K–49,999	1,569	31.4	7.04	6.47	7.61	
	$50K+	1,715	40.0	5.93	5.58	6.28	
Religion	None	675	13.4	6.20	5.52	6.87	0.04
	Catholic	1,468	29.0	6.47	5.84	7.11	
	Protestant	2,522	51.9	6.46	6.09	6.83	
	Other	286	5.7	5.26	4.49	6.02	
Height	63″	1,755	35.5	6.26	5.88	6.63	0.31
	64″–65″	1,423	27.9	7.11	6.52	7.70	
	66″	591	12.1	5.64	5.03	6.25	
	67″	1,138	24.5	6.06	5.58	6.53	
BMI	18	88	2.0	5.00	3.70	6.30	0.55
	19–24	1,957	44.7	6.54	6.13	6.94	
	25–29	1,328	27.1	6.59	6.07	7.11	
	30	1,262	26.3	6.16	5.58	6.75	
Children	No	1,191	21.8	5.87	5.40	6.35	0.03
	Yes	3,760	78.2	6.50	6.20	6.80	
Currently pregnant	No	4,727	95.9	6.43	6.16	6.69	0.02
	Yes	224	4.1	5.05	4.06	6.03	
Health	E/VG/G	439	8.0	6.41	6.14	6.68	0.31
	F/P	4,499	92.0	5.83	4.81	6.86	
Total		4,951		6.37	6.11	6.62	

Percentages account for complex survey design in which certain groups are oversampled in order to obtain adequate subjects for analysis. *P* values represent bivariable negative binomial regression.

E/VG/G = Excellent/Very Good/Good; F/P = Fair/Poor.

Table 4

Multivariate negative binomial regression analysis examining the coital frequency in U.S. women aged 25–45 years (participants with complete data analyzed, N = 4,098)

Characteristic		IRR	95% confidence interval		P value
Age		0.97	0.93	1.00	0.08
Married	Yes vs. no	1.13	1.03	1.25	0.01
Race	White	Reference	Reference	Reference	Reference
	Black	0.92	0.80	1.06	0.25
	Hispanic	1.12	0.98	1.28	0.10
	Asian	0.85	0.68	1.05	0.14
	Other	0.79	0.57	1.08	0.14
Education	<High School	Reference	Reference	Reference	Reference
	High School	1.03	0.89	1.19	0.66
	>High School	0.93	0.81	1.08	0.36
Income	$0–24,999	Reference	Reference	Reference	Reference
	$25K–49,999	1.09	0.97	1.23	0.16
	$50K+	0.95	0.83	1.08	0.43
Religion	None	Reference	Reference	Reference	Reference
	Catholic	1.02	0.88	1.19	0.77
	Protestant	1.06	0.93	1.20	0.39
	Other	0.93	0.75	1.15	0.49
Height	6″ increase	0.96	0.87	1.06	0.47
BMI	5–unit increase	0.98	0.94	1.02	0.29
Children	Yes vs. no	1.07	0.96	1.19	0.23
Currently pregnant[*]	Yes vs. no	0.75	0.62	0.91	0.00
Health	Good vs. bad	0.92	0.76	1.11	0.37

[*] Incidence rate ratio (IRR) computed without body mass index (BMI) in model.