

Sexual Behaviors, Relationships, and Perceived Health Among Adult Men in the United States: Results from a National Probability Sample

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ABSTRACT

Introduction. To provide a foundation for those who provide sexual health services and programs to men in the United States, the need for population-based data that describes men's sexual behaviors and their correlates remains.

Aims. The purpose of this study was to, in a national probability survey of men ages 18–94 years, assess the occurrence and frequency of sexual behaviors and their associations with relationship status and health status.

Methods. A national probability sample of 2,522 men aged 18 to 94 completed a cross-sectional survey about their sexual behaviors, relationship status, and health.

Main Outcome Measures. Relationship status; health status; experience of solo masturbation, partnered masturbation, giving oral sex, receiving oral sex, vaginal intercourse and anal intercourse, in the past 90 days; frequency of solo masturbation, vaginal intercourse and anal intercourse in the past year.

Results. Masturbation, oral intercourse, and vaginal intercourse are prevalent among men throughout most of their adult life, with both occurrence and frequency varying with age and as functions of relationship type and physical health status. Masturbation is prevalent and frequent across various stages of life and for both those with and without a relational partner, with fewer men with fair to poor health reporting recent masturbation. Patterns of giving oral sex to a female partner were similar to those for receiving oral sex. Vaginal intercourse in the past 90 days was more prevalent among men in their late 20s and 30s than in the other age groups, although being reported by approximately 50% of men in the sixth and seventh decades of life. Anal intercourse and sexual interactions with other men were less common than all other sexual behaviors.

Conclusion. Contemporary men in the United States engage in diverse solo and partnered sexual activities; however, sexual behavior is less common and more infrequent among older age cohorts. **Reece M, Herbenick D, Schick V, Sanders SA, Dodge B, and Fortenberry JD. Sexual behaviors, relationships, and perceived health among adult men in the United States: Results from a national probability sample. J Sex Med 2010;7(suppl 5):291–304.**

Key Words. Probability Sample; Sexual Behavior; Men; Relationships; Health

Introduction

In 1948, Alfred Kinsey and his team published data from what was the first large-scale and systematic study of sexual behavior among men in the United States [1]. At the time, little was known about what men (and women) did sexually. Kinsey wrote that he, as a biology professor at Indiana University, felt unable to answer—from a scientific

perspective—the questions that his students asked about sexual behavior. As a result, Dr. Kinsey began contacting individuals through various social networks and began interviewing what would eventually be thousands of men and women. Kinsey described his work as “a fact-finding survey in which an attempt is being made to discover what people do sexually, and what factors account for differences in sexual behavior among individuals

and among various segments of the population.” [1]

For decades, data from Kinsey’s interviews with men, which were conducted in the 1930s and 1940s, represented much of what was known about male sexual behavior. It was not until the realities of the epidemics of the human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) revealed how little was known about sexual behavior and condom use in the United States that the first nationally representative probability survey of sex and sexuality-related behavior was conducted in 1992 [2,3]. Since 1992, there has only been one other probability sample of adult sexual behavior, conducted in 2004 among adults aged 57 to 84 years [4].

Some data on sexuality and sexuality-related behaviors (e.g., condom use) are available through a range of other national studies focused specifically on health (e.g., General Social Survey, National Household Survey of Drug Abuse, National Survey of Family Growth, Youth Risk Behavior Surveillance Survey, The National Longitudinal Study of Adolescent Health [Add Health]) [5–19]. Also, to facilitate the design of sexual health interventions responsive to the needs of unique populations, data have been available from numerous studies that were focused on specific subpopulations selected for their age, gender, sexual orientation, health status, sexual behaviors or sexual risk, or other sociodemographic characteristics (e.g., [20–30]). Although valuable, most of these studies have been conducted in response to sexual health problems such as unintended pregnancy and sexually-transmitted infections including HIV.

Among the many important influences on male sexual behavior since 1992 was the introduction of the first phosphodiesterase type 5 inhibitor (Sildenafil citrate) in 1998; an innovation that changed sexual behaviors in two important ways [4]. Perhaps most importantly, it made sexual intercourse possible for many men who had previously been unable to reliably attain or maintain an erection. Second, it inspired public, corporate, and scientific interest in the sexual lives of men, particularly those who were older and who had been scientifically understudied.

To provide a contemporary foundation for those who provide medical and public health services and programs to men in the United States, there remains a need for a comprehensive assessment of men’s sexual behaviors and their correlates.

Aim

The purpose of this study, the National Survey of Sexual Health and Behavior (NSSHB), and in particular those analyses presented in this report, was to document the sexual behavior patterns of adult men (age over 18 years) in the United States and to assess the extent to which their sexual behaviors varied by the characteristics of their relationships and health status.

Methods

During March–May 2009, the NSSHB data were collected using a population-based cross-sectional survey of adolescents and adults in the United States via research panels of Knowledge Networks (Menlo Park, CA, USA). Research panels accessed through Knowledge Networks are based on a national probability sample established using both random digit dialing and an address-based sampling (ABS) frame. ABS involves the probability sampling of a frame of residential addresses in the United States derived from the U.S. Postal Service’s Delivery Sequence File, a system that contains detailed information on every mail deliverable address in the United States. Collectively, the sampling frame from which participants are recruited covers approximately 98% of all U.S. households. Randomly selected addresses are recruited to the research panel through a series of mailings and subsequently by telephone follow-ups to nonresponders when possible. To further correct sources of sampling and non-sampling error, study samples are corrected with a post-stratification adjustment using demographic distributions from the most recent data available from the Current Population Survey, the monthly population survey conducted by the U.S. Bureau of the Census considered to be the standard for measuring demographic and other trends in the United States. These adjustments result in a panel base weight that was employed in a probability proportional to size (PPS) selection method for establishing the samples for this study. Population specific distributions for this study were based upon the December 2008 Current Population Survey [31].

Once the sample frame was established, all individuals within that frame received a recruitment message from Knowledge Networks that provided a brief description of the NSSHB and invited them to participate. Of 6,182 adults reviewing the study description, 5,045 (82%) consented to and partici-

pated. The data presented in this report are limited to the 2,522 adult men surveyed in the NSSHB.

All data were collected by Knowledge Networks via the Internet; participants in a given Knowledge Networks panel were provided with access to the Internet and hardware if needed. Researchers have used Knowledge Networks for multiple health-related studies, substantiating the validity of such methods for obtaining data from nationally representative samples of the U.S. population [32–38].

Main Outcome Measures

Sexual Behaviors

To assess sexual behaviors, participants were asked to describe the extent to which they had participated in a range of solo and partnered sexual behaviors during specific time periods (within the past month, within the past 3 months, within the past year, more than 1 year ago). To ensure the ability for comparison of behavioral patterns from this study with those provided in previous research, valid measures used in other nationally representative studies of specific sexual behaviors served as the foundation for behavioral measures used in this study [2–4,37,38]. Behaviors assessed included solo masturbation, partnered masturbation, receiving oral sex and giving oral sex (with measures specific to the gender of the participating partner for each behavior), vaginal intercourse, and anal intercourse (both insertive and receptive). This article includes summaries of sexual behaviors that occurred within the past 90 days. Men who reported having participated in a specific sexual behavior (masturbation, vaginal intercourse, anal intercourse) within the past year were subsequently asked to describe the frequency with which they had participated in that behavior on average during the past year (a few times per year, monthly, a few times per month, weekly, two to three times per week, four or more times per week).

Health Status

Health status was assessed by a single item that asked participants to rate their overall health through a single 5-response item (excellent, very good, good, fair, poor) that has been used across multiple studies of this nature [39,40].

Relationship Status

Participants were asked to describe their current relationship status (married, living with partner

but not married, in a relationship but not living together, single but dating one or more people, or single, and not dating).

Data Analyses

During analyses, post-stratification data weights were used to reduce variance and minimize bias caused by nonsampling error in order to maximize the generalizability of the sample characteristics to the population. Distributions for age, race, gender, Hispanic ethnicity, education, and U.S. census region were used in post-stratification adjustments. Rates of participation in sexual behaviors within the past 90 days, and frequency of participation in specific behaviors on average during the past year, with corresponding 95% confidence intervals were calculated using Adjusted Wald's methods, and are presented by relationship and health status, stratified by age. Relations between sexual behaviors, relationships, and health status were tested using a logistic regression model.

Results

Participant Characteristics

The sociodemographic, relationship, and health characteristics of participants are summarized in Table 1. These characteristics closely match those of men in the United States at the time study data were collected based upon population characteristics established by updates to the U.S. Census from the December 2008 Current Population Survey [31].

Masturbation

The rates for both solo and partnered masturbation by men are detailed by age according to relationship and health status in Table 2. Masturbation was a significant component of the sexual repertoire for men across all age groups, with rates of solo masturbation in the past 90 days being consistently above 60% among men through age 59 years, and with rates at approximately 50% through age 69. Masturbation rates were highest among those in the 25–39 year age groups, peaking at 95.5% of men who described themselves as single and dating and being above 80% for all unmarried men in this age category. The lowest rate of masturbation was observed among married men over 70 years of age (26.89%). Within the majority of age groups, partnered men were less likely to report masturbation than non-

Table 1 Weighted participant characteristics for total men's sample (N = 2,522)

Sample characteristics	%	N
Age (years)		
18–24	11.0	277
25–29	13.5	341
30–39	16.2	410
40–49	20.7	522
50–59	18.5	455
60–69	12.8	322
>70	7.3	184
Ethnicity		
White, non-Hispanic	58.8	1,735
Black, non-Hispanic	9.9	250
Hispanic	14.9	375
Other, non-Hispanic	6.4	161
Education		
Bachelors degree or higher	29.2	737
Some college	27.2	685
High school graduate	30.0	757
Less than high school	13.6	342
Sexual orientation (N = 2,521)		
Heterosexual	92.2	2,335
Bisexual	2.6	66
Homosexual	4.2	105
Other	1.0	25
Marital status		
Married	47.8	1,205
Never married	28.1	709
Divorced	11.0	278
Living together-not married	9.0	227
Separated	2.0	50
Widowed	2.1	53
Relationship status (N = 2,517)		
Single, not dating	23.2	584
Single, dating one or more person	9.0	227
In relationship, not living together	8.6	216
In relationship, living together	10.0	252
Married, living together	48.2	1,214
Married, not living together	0.9	23
Geographic region of United States		
Northeast	18.1	458
Midwest	21.9	552
South	36.5	922
West	23.4	591
MSA status		
Metropolitan area	83.4	2,105
Non-metropolitan area	16.6	418
Annual household income		
Less than \$25,000	20.1	506
\$25,000–\$49,999	29.6	745
\$50,000–\$74,999	20.7	522
Over \$75,000	29.7	749
Children under 18 in household		
No	74.5	1,878
Yes	25.5	644
Health status (N = 2,521)		
Excellent	14.1	355
Very good	41.0	1,034
Good	32.9	830
Fair	9.3	236
Poor	2.6	66

partnered men, however among partnered men rates of masturbation were close to or exceeded 60% (58.62–73.56%) through age 59 years, after which partnered men were less likely to report

masturbation. Health status was not predictive of masturbation in the past 90 days with the exception of those over age 70 years for whom poor to fair health status was associated with lower rates of masturbation (17.65%) than for those with good to excellent health status (40.0%).

Masturbation with a sexual partner during the past 90 days was less common than solo masturbation across all age groups, with rates being consistently below 50% for all men. Partnered masturbation was more likely to be reported by partnered men than non-partnered men through age 69 years, with rates being lowest across all age groups among men who described themselves as single. Health status was not predictive of masturbation with a sexual partner, with the exception of men in the 60–69 year age category, for whom those with poor to fair health status reported more partnered masturbation (19.4%) than did those with good to excellent health status (11.1%).

Oral Sex

Rates for oral sex with female partners in the past 90 days (both giving to female partners and receiving from female partners) are presented in Table 3. Among all men, rates of receiving oral sex from a female partner were highest among men in their late 20s and 30s, and within those age groups highest among men who had a non-cohabitating relationship partner (80.7%). Those with the lowest rate of receiving oral sex were men over age 70 years who were not married but living with a partner (0.0%). Receiving oral sex was generally more common among men in their late 20s through their 40s than among younger and older men. Being partnered was predictive of having received oral sex in the past 90 days for all men through age 69 years.

The patterns of giving oral sex to a female partner were similar to those observed for receiving oral sex, with partnered men more likely to have reported giving oral sex than non-partnered men across all ages through 69 years and being generally higher across all relationship categories for men in their late 20s through 40s.

Vaginal Intercourse

Table 4 provides a summary of reported rates of vaginal intercourse, indicating, as with other sexual behaviors, that vaginal intercourse in the past 90 days was more prevalent among men in their late 20s and 30s than in the other age groups, although being reported by approximately 50% of men in the sixth and seventh decades of life.

Table 2 Men' weighted masturbation rates by relationship and health status, stratified by age

Age	Relationship status								Health Status			
	Total sample	Single	Single and dating	In relationship, not living together	Living together, not married	Married	Not partnered	Partnered	Partnered vs. not partnered†	Excellent to good	Fair to poor	Excellent to good vs fair to poor††
	% Engaged (Total N) (95% CI)	% Engaged in behavior past 90 days (Total N) (95% CI)						% Engaged in behavior past 90 days (N) (95% CI)	Adjusted odds ratio (95% CI)	% Engaged in behavior past 90 days (N) (95% CI)	Adjusted odds ratio (95% CI)	
Masturbation alone												
18–24	66.5% (268) (60.6%–71.9%)	80.2% (96) (71.1%–87.0%)	58.7% (46) (44.3%–71.7%)	67.1% (70) (55.5%–77.0%)	56.3% (32) (39.3%–71.8%)	41.7% (24) (24.4%–61.2%)	77.2% (142) (69.6%–83.4%)	59.5% (126) (50.8%–67.7%)	0.52** (0.31–0.87)	62.6% (257) (56.5%–68.3%)	40.0% (10) (16.7%–68.8%)	2.55 (0.69–9.34)
25–29	77.0% (335) (72.2%–81.2%)	84.4% (45) (70.9%–92.6%)	96.6% (29) (81.4%–100.8%)	87.5% (16) (62.7%–97.8%)	84.8% (33) (68.6%–93.8%)	70.8% (212) (64.3%–76.5%)	89.2% (74) (79.8%–94.7%)	73.6% (261) (67.9%–78.6%)	0.39* (0.18–0.85)	76.3% (321) (71.4%–80.7%)	100.0% (13) (73.4%–103.8%)	0.19 (0.01–3.91)
30–39	71.1% (396) (66.4%–75.3%)	77.4% (53) (64.3%–86.7%)	75.7% (37) (59.7%–86.8%)	87.5% (24) (68.2%–96.5%)	64.7% (51) (50.9%–76.4%)	68.8% (231) (62.6%–74.5%)	76.7% (90) (66.9%–84.3%)	69.6% (306) (64.2%–74.5%)	0.74 (0.43–1.27)	70.5% (380) (65.8%–74.9%)	81.3% (16) (56.2%–94.2%)	0.53 (0.13–2.07)
40–49	65.9% (499) (61.6%–69.9%)	75.0% (116) (66.4%–82.0%)	76.8% (56) (64.1%–86.0%)	60.6% (33) (43.6%–75.4%)	58.5% (53) (45.1%–70.8%)	61.4% (241) (55.1%–67.3%)	75.6% (172) (68.6%–81.4%)	60.9% (327) (55.5%–66.0%)	0.51** (0.34–0.78)	64.8% (437) (60.2%–69.1%)	72.6% (62) (60.3%–82.2%)	0.81 (0.44–1.49)
50–59	64.1% (454) (59.6%–68.4%)	70.1% (154) (62.5%–76.8%)	76.3% (38) (60.6%–87.2%)	68.8% (32) (51.3%–82.2%)	54.9% (51) (41.4%–67.7%)	57.9% (178) (50.5%–64.9%)	71.4% (192) (64.6%–77.3%)	58.6% (261) (52.6%–64.4%)	0.52** (0.35–0.79)	65.2% (359) (60.1%–69.9%)	59.1% (93) (49.0%–68.6%)	1.54 (0.94–2.50)
60–69	49.8% (317) (–2.9%–84.9%)	62.0% (71) (50.3%–72.4%)	30.0% (10) (10.3%–60.8%)	52.0% (25) (33.5%–70.0%)	31.6% (19) (15.2%–54.2%)	47.9% (192) (41.0%–55.0%)	58.0% (81) (47.1%–68.2%)	47.0% (236) (40.8%–53.4%)	0.63 (0.38–1.06)	50.8% (248) (44.6%–57.0%)	47.1% (70) (35.9%–58.7%)	1.26 (0.74–2.17)
70+	35.8% (179) (29.1%–43.1%)	48.5% (33) (32.5%–64.8%)	57.1% (7) (25.0%–84.2%)	64.3% (14) (38.6%–83.8%)	40.0% (5) (11.6%–77.1%)	26.9% (119) (19.7%–35.5%)	50.0% (40) (35.2%–64.8%)	31.2% (138) (24.0%–39.3%)	0.450* (0.22–0.93)	40.0% (145) (32.4%–48.1%)	17.6% (34) (8.0%–33.9%)	2.92* (1.15–7.38)
Partnered masturbation												
18–24	25.6% (262) (20.7%–31.2%)	10.0% (90) (5.1%–18.1%)	28.3% (46) (17.2%–42.7%)	39.1% (69) (28.5%–50.9%)	30.3% (33) (17.2%–47.5%)	33.3% (24) (17.8%–53.4%)	16.2% (136) (10.9%–23.3%)	35.7% (126) (27.9%–44.4%)	2.82*** (1.57–5.04)	25.3% (253) (20.3%–31.0%)	40.0% (10) (16.7%–68.8%)	0.63 (0.16–2.46)
25–29	30.3% (335) (25.6%–35.4%)	4.3% (46) (0.4%–15.3%)	20.7% (29) (9.5%–38.7%)	43.8% (16) (23.1%–66.8%)	42.4% (33) (27.2%–59.2%)	34.4% (212) (28.4%–41.1%)	10.7% (75) (5.3%–19.9%)	36.0% (261) (30.4%–42.0%)	5.64*** (2.41–13.18)	30.3% (323) (25.6%–35.6%)	30.8% (13) (12.4%–58.0%)	0.37 (0.09–1.50)
30–39	32.5% (398) (28.1%–37.3%)	1.9% (53) (–0.6%–10.9%)	43.2% (37) (28.7%–59.1%)	34.6% (26) (19.3%–53.9%)	32.7% (52) (21.5%–46.3%)	37.1% (229) (31.1%–43.5%)	18.9% (90) (12.0%–28.3%)	36.2% (307) (31.0%–41.7%)	2.36** (1.33–4.20)	32.7% (382) (28.2%–37.6%)	31.3% (16) (13.9%–55.9%)	0.86 (0.28–2.71)
40–49	26.2% (499) (22.5%–30.2%)	10.3% (116) (5.9%–17.4%)	23.2% (56) (14.0%–35.9%)	35.3% (34) (21.4%–52.2%)	40.7% (54) (28.7%–54.0%)	30.0% (240) (24.5%–36.1%)	14.5% (172) (10.0%–20.6%)	32.3% (328) (27.5%–37.6%)	2.73*** (1.67–4.45)	27.2% (437) (23.3%–31.6%)	19.4% (62) (11.3%–31.0%)	1.18 (0.60–2.35)
50–59	20.0% (452) (16.6%–23.9%)	9.7% (154) (5.9%–15.5%)	42.1% (38) (27.8%–57.8%)	33.3% (33) (19.7%–50.5%)	29.4% (51) (18.6%–43.1%)	19.1% (178) (14.0%–25.5%)	16.1% (192) (11.6%–22.0%)	22.9% (262) (18.2%–28.4%)	1.65* (1.00–2.72)	19.0% (357) (15.3%–23.5%)	22.6% (93) (15.2%–32.1%)	0.68 (0.39–1.20)
60–69	13.0% (311) (9.7%–17.2%)	2.9% (70) (0.2%–10.4%)	30.0% (10) (10.3%–60.8%)	4.0% (25) (–0.9%–21.1%)	15.8% (19) (4.7%–38.4%)	17.0% (188) (12.3%–23.1%)	6.3% (80) (2.4%–14.1%)	15.5% (232) (11.4%–20.8%)	3.35* (1.21–9.28)	11.1% (243) (7.7%–15.7%)	19.4% (67) (11.6%–30.6%)	0.43* (0.21–0.89)
70+	7.6% (171) (4.4%–12.7%)	0.0% (30) (–2.1%–13.5%)	0.0% (7) (–5.0%–40.4%)	11.1% (9) (–0.2%–45.7%)	20.0% (5) (2.0%–64.0%)	8.4% (119) (4.5%–14.9%)	0.0% (37) (–1.8%–11.2%)	9.0% (133) (5.1%–15.2%)	4.93 (0.46–53.06)	8.0% (137) (4.4%–13.9%)	5.9% (34) (0.7%–20.1%)	1.07 (0.25–4.57)

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

†Adjusted odds ratios are based on a logistic regression including the health status as a covariate, estimated separately by age group.

††Adjusted odds ratios are based on a logistic regression including the partner status as a covariate, estimated separately by age group.

CI = confidence interval.

Table 3 Men's weighted oral sex (with female partner) rates by relationship and health status, stratified by age

Age	Total sample % Engaged (Total N) (95% CI)	Relationship Status							Partnered vs. not partnered [†]	Health Status		Excellent to good vs fair to poor ^{††}
		Single	Single and dating	In relationship, not living together	Living together, not married	Married	Not partnered	Partnered		Excellent to good	Fair to poor	
		% Engaged in behavior past 90 days (Total N) (95% CI)								% Engaged in behavior past 90 days (N) (95% CI)		
Received oral from female												
18-24	43.6% (265) (37.8%–49.6%)	19.4% (93) (12.5%–28.6%)	41.3% (46) (28.3%–55.7%)	58.6% (70) (46.9%–69.4%)	71.9% (32) (54.5%–84.6%)	58.3% (24) (38.8%–75.6%)	18.1% (139) (12.6%–25.4%)	61.9% (126) (53.2%–69.9%)	4.53*** (2.69–7.64)	44.07% (255) (38.11%–50.21%)	60.00% (10) (31.16%–83.29%)	0.61 (0.15–2.42)
25-29	63.6% (332) (58.3%–68.6%)	23.9% (46) (13.8%–30.1%)	64.3% (28) (45.8%–79.4%)	68.8% (16) (44.1%–86.1%)	67.6% (34) (50.7%–81.0%)	71.2% (208) (64.6%–76.9%)	39.2% (74) (28.9%–50.6%)	70.5% (258) (64.7%–75.8%)	3.12*** (1.79–5.45)	65.63% (320) (60.26%–70.62%)	7.69% (13) (–0.74%–35.43%)	12.42** (1.66–92.82)
30-39	63.6% (398) (58.8%–68.2%)	17.0% (53) (9.0%–29.5%)	78.4% (37) (62.6%–88.9%)	80.8% (26) (61.7%–92.0%)	68.0% (50) (54.1%–79.3%)	69.6% (230) (63.3%–75.2%)	42.2% (90) (32.5%–52.5%)	70.3% (306) (64.9%–75.1%)	3.17*** (1.94–5.16)	64.23% (383) (59.31%–68.87%)	46.67% (15) (24.80%–69.89%)	1.48 (0.51–4.31)
40-49	49.7% (501) (45.3%–54.1%)	18.1% (116) (12.1%–26.2%)	58.9% (56) (45.9%–70.8%)	51.5% (33) (35.2%–67.5%)	64.2% (53) (50.7%–75.7%)	59.1% (242) (52.8%–65.1%)	31.4% (172) (24.9%–38.7%)	59.1% (328) (53.7%–64.3%)	3.15*** (2.12–4.69)	51.03% (439) (46.36%–55.67%)	41.94% (62) (30.47%–54.34%)	1.09 (0.62–1.94)
50-59	35.6% (454) (31.3%–40.1%)	15.0% (153) (10.2%–21.6%)	52.6% (38) (37.3%–67.5%)	60.6% (33) (43.6%–75.4%)	31.4% (51) (20.3%–45.1%)	46.1% (180) (39.0%–53.4%)	22.5% (191) (17.1%–29.0%)	45.1% (264) (39.2%–51.1%)	2.81*** (1.83–4.30)	36.77% (359) (31.94%–41.87%)	30.85% (94) (22.39%–40.82%)	1.01 (0.61–1.69)
60-69	24.1% (312) (19.7%–29.2%)	10.0% (70) (4.6%–19.5%)	11.1% (9) (–0.2%–45.7%)	20.0% (25) (8.4%–39.6%)	52.6% (19) (31.7%–72.7%)	27.0% (189) (21.1%–33.7%)	10.1% (79) (5.0%–19.0%)	28.3% (233) (22.9%–34.4%)	3.42** (1.59–7.35)	23.08% (247) (18.24%–28.74%)	28.36% (67) (18.91%–40.15%)	0.65 (0.34–1.22)
70+	15.4% (177) (10.8%–21.5%)	3.3% (30) (–0.8%–18.1%)	42.9% (7) (15.8%–75.0%)	57.1% (14) (32.5%–78.7%)	0.0% (5) (–5.5%–48.9%)	12.4% (121) (7.5%–19.6%)	10.8% (37) (3.7%–25.3%)	16.4% (140) (11.1%–23.5%)	1.65 (0.53–5.19)	18.06% (144) (12.58%–25.19%)	5.71% (35) (0.62%–19.57%)	4.76 (0.88–25.72)
Gave oral to female												
18-24	37.2% (265) (31.6%–43.2%)	15.1% (93) (9.1%–23.8%)	44.7% (47) (31.4%–58.8%)	57.1% (70) (45.5%–68.1%)	50.0% (32) (33.6%–66.4%)	33.3% (24) (17.8%–53.4%)	25.0% (140) (18.5%–32.8%)	50.8% (126) (42.2%–59.4%)	3.17*** (1.88–5.34)	37.80% (254) (32.05%–43.90%)	20.00% (10) (4.59%–52.06%)	2.75 (0.56–13.62)
25-29	59.7% (332) (54.3%–64.8%)	19.6% (46) (10.4%–33.4%)	60.7% (28) (42.4%–76.5%)	37.5% (16) (18.4%–61.5%)	54.5% (33) (38.0%–70.2%)	70.7% (208) (64.1%–76.5%)	35.1% (74) (25.2%–46.5%)	66.5% (257) (60.6%–72.0%)	3.22*** (1.85–5.60)	61.13% (319) (55.68%–66.32%)	23.08% (13) (7.50%–50.94%)	3.22 (0.79–13.16)
30-39	56.8% (399) (51.9%–61.6%)	13.2% (53) (6.2%–25.2%)	69.4% (36) (53.0%–82.1%)	53.8% (26) (35.5%–71.3%)	61.5% (52) (47.9%–73.6%)	64.1% (231) (57.7%–70.0%)	36.0% (89) (26.7%–46.3%)	62.8% (309) (57.3%–68.0%)	2.77– (1.69–4.52)	58.07% (384) (53.08%–62.91%)	25.00% (16) (9.71%–49.97%)	3.37* (1.00–11.38)
40-49	45.7% (500) (41.4%–50.1%)	15.5% (116) (10.0%–23.3%)	44.6% (56) (32.4%–57.6%)	57.6% (33) (40.8%–72.8%)	66.0% (53) (52.6%–77.4%)	54.1% (242) (47.8%–60.3%)	25.0% (172) (19.1%–32.0%)	56.4% (328) (51.0%–61.7%)	3.92*** (2.58–5.94)	46.80% (438) (42.18%–51.48%)	37.10% (62) (26.13%–49.57%)	0.97 (0.54–1.75)
50-59	31.6% (453) (27.5%–36.0%)	9.8% (153) (5.9%–15.6%)	44.7% (38) (30.1%–60.3%)	53.1% (32) (36.4%–69.1%)	35.3% (51) (23.6%–49.1%)	42.5% (179) (35.4%–49.8%)	16.8% (191) (12.1%–22.7%)	42.4% (262) (36.5%–48.4%)	3.93*** (2.46–6.30)	31.56% (358) (26.96%–36.56%)	31.91% (94) (23.33%–41.92%)	0.67 (0.39–1.14)
60-69	21.0% (309) (16.8%–25.9%)	7.4% (68) (2.8%–16.5%)	22.2% (9) (5.3%–55.7%)	16.0% (25) (5.8%–35.3%)	47.4% (19) (27.3%–68.3%)	23.5% (187) (18.0%–30.1%)	9.1% (77) (4.2%–17.9%)	24.7% (231) (19.5%–30.6%)	3.02** (1.34–6.82)	22.86% (245) (18.03%–28.53%)	15.38% (65) (8.38%–26.25%)	1.47 (0.69–3.12)
70+	17.8% (177) (12.8%–24.1%)	0.0% (30) (–2.1%–13.5%)	28.6% (7) (7.6%–64.8%)	85.7% (14) (58.8%–97.2%)	20.0% (5) (2.0%–64.0%)	13.2% (121) (8.2%–20.5%)	5.4% (37) (0.6%–18.6%)	20.7% (140) (14.8%–28.2%)	3.65 (0.94–14.21)	20.28% (143) (14.46%–27.65%)	5.88% (34) (0.65%–20.07%)	3.92 (0.92–16.76)

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

[†]Adjusted odds ratios are based on a logistic regression including the health status as a covariate, estimated separately by age group.

^{††}Adjusted odds ratios are based on a logistic regression including the partner status as a covariate, estimated separately by age group.

CI = confidence interval.

Table 4 Men's weighted intercourse rates by relationship and health status, stratified by age

Age	Relationship status								Health status			
	Total sample	Single	Single and dating	In relationship, not living together	Living together, not married	Married	Not partnered	Partnered	Partnered vs. not partnered [†]	Excellent to good	Fair to poor	Excellent to good vs fair to poor ^{††}
	% Engaged (Total N) (95% CI)	% Engaged in behavior past 90 days (Total N) (95% CI)						% Engaged in behavior past 90 days (N) (95% CI)		Adjusted odds ratio (95% CI)	% Engaged in behavior past 90 days (N) (95% CI)	
Vaginal												
18–24	53.5% (268) (47.5%–59.4%)	24.0% (96) (16.5%–33.4%)	60.9% (46) (46.4%–73.6%)	65.7% (70) (54.0%–75.8%)	72.7% (33) (55.6%–85.1%)	95.8% (24) (78.1%–100.9%)	23.2% (142) (17.0%–30.8%)	73.2% (127) (64.9%–80.2%)	5.01*** (2.96–8.46)	51.62% (257) (45.53%–57.66%)	70.00% (10) (39.23%–89.67%)	0.56 (0.13–2.39)
25–29	79.8% (327) (75.1%–83.8%)	23.9% (46) (13.8%–38.1%)	59.3% (27) (40.7%–75.5%)	86.7% (15) (60.9%–97.5%)	72.7% (33) (55.6%–85.1%)	95.7% (207) (91.8%–97.8%)	37.0% (73) (26.8%–48.5%)	92.2% (255) (88.1%–94.9%)	18.99*** (9.68–37.28)	81.53% (314) (76.85%–85.45%)	38.46% (13) (17.60%–64.59%)	1.76 (0.44–7.00)
30–39	78.7% (394) (74.4%–82.5%)	18.9% (53) (10.4%–31.6%)	75.7% (37) (59.7%–86.8%)	84.6% (26) (65.9%–94.5%)	80.8% (52) (67.9%–89.4%)	91.6% (226) (87.2%–94.6%)	42.2% (90) (32.5%–52.5%)	89.1% (304) (85.1%–92.2%)	11.13*** (6.36–19.47)	79.68% (379) (75.33%–83.44%)	56.25% (16) (33.15%–76.93%)	1.55 (0.46–5.23)
40–49	67.1% (504) (62.9%–71.1%)	23.5% (115) (16.6%–32.1%)	61.4% (57) (48.4%–73.0%)	60.6% (33) (43.6%–75.4%)	74.1% (54) (61.0%–84.0%)	88.1% (244) (83.4%–91.6%)	36.0% (172) (29.2%–43.5%)	83.1% (331) (78.7%–86.8%)	8.62*** (5.60–13.26)	69.00% (442) (64.54%–73.14%)	53.23% (62) (40.98%–65.09%)	1.11 (0.60–2.06)
50–59	52.1% (458) (47.5%–56.6%)	13.7% (153) (9.1%–20.1%)	63.2% (38) (47.2%–76.7%)	75.8% (33) (58.7%–87.4%)	59.3% (54) (46.0%–71.3%)	75.7% (181) (68.9%–81.4%)	23.6% (191) (18.1%–30.1%)	72.4% (268) (66.7%–77.4%)	8.43*** (5.43–13.08)	54.82% (363) (49.68%–59.86%)	42.11% (95) (32.67%–52.16%)	0.97 (0.57–1.66)
60–69	46.7% (314) (41.3%–52.2%)	7.0% (71) (2.7%–15.8%)	33.3% (9) (11.7%–64.9%)	80.0% (25) (60.4%–91.6%)	63.2% (19) (40.9%–81.0%)	56.1% (189) (49.0%–63.0%)	10.0% (80) (4.9%–18.7%)	59.2% (233) (52.8%–65.3%)	12.46*** (5.74–27.03)	52.44% (246) (46.21%–58.59%)	26.47% (68) (17.38%–38.08%)	2.98*** (1.56–5.70)
70+	33.7% (177) (27.1%–41.0%)	12.9% (31) (4.5%–29.5%)	28.6% (7) (7.6%–64.8%)	85.7% (14) (58.8%–97.2%)	40.0% (5) (11.6%–77.1%)	32.8% (119) (25.0%–41.6%)	15.8% (38) (7.1%–30.8%)	38.4% (138) (30.7%–46.7%)	3.11* (1.24–7.81)	39.16% (143) (31.54%–47.35%)	11.76% (34) (4.07%–27.22%)	5.14** (1.69–15.63)
Anal (insertive)												
18–24	5.9% (266) (3.6%–9.5%)	1.1% (94) (0.4%–6.4%)	0.0% (46) (1.5%–9.2%)	7.1% (70) (2.7%–16.0%)	18.8% (32) (8.5%–35.7%)	12.5% (24) (3.5%–31.8%)	0.7% (140) (0.3%–4.3%)	11.1% (126) (6.6%–17.9%)	11.32** (2.14–59.76)	6.23% (257) (3.80%–9.94%)	0.00% (10) (4.34%–32.09%)	— —
25–29	15.9% (331) (12.3%–20.2%)	2.2% (45) (0.7%–12.6%)	20.7% (29) (9.5%–38.7%)	6.7% (15) (0.8%–31.8%)	21.2% (33) (10.4%–38.0%)	17.8% (208) (13.2%–23.6%)	9.5% (74) (4.4%–18.5%)	17.6% (256) (13.4%–22.7%)	1.68 (0.73–3.84)	16.40% (317) (12.71%–20.90%)	0.00% (9) (4.55%–34.46%)	5.79 (0.17–201.67)
30–39	13.8% (393) (10.7%–17.6%)	1.9% (53) (0.6%–10.9%)	35.1% (37) (21.8%–51.3%)	11.5% (26) (3.2%–29.8%)	30.8% (52) (19.8%–44.3%)	9.7% (226) (6.5%–14.4%)	15.6% (90) (9.4%–24.6%)	13.5% (304) (10.1%–17.8%)	0.88 (0.45–1.72)	13.76% (378) (10.63%–17.61%)	27.27% (11) (9.20%–57.11%)	0.80 (0.20–3.17)
40–49	13.2% (501) (10.5%–16.5%)	7.8% (115) (4.0%–14.4%)	17.9% (56) (9.8%–30.0%)	33.3% (33) (19.7%–50.5%)	18.9% (53) (10.4%–31.6%)	10.7% (243) (7.4%–15.3%)	11.1% (171) (7.2%–16.8%)	14.3% (329) (10.9%–18.5%)	1.17 (0.66–2.08)	14.32% (440) (11.34%–17.91%)	7.32% (41) (1.83%–20.12%)	3.05 (0.93–10.02)
50–59	6.0% (451) (4.1%–8.6%)	7.1% (155) (3.9%–12.4%)	18.4% (38) (8.9%–33.7%)	9.4% (32) (2.5%–25.0%)	8.2% (49) (2.7%–19.7%)	1.1% (176) (0.0%–4.3%)	9.3% (193) (5.9%–14.3%)	3.5% (257) (1.8%–6.6%)	0.39* (0.17–0.88)	5.90% (356) (3.85%–8.89%)	6.58% (76) (2.50%–14.84%)	1.13 (0.44–2.95)
60–69	5.0% (312) (3.0%–8.1%)	2.9% (70) (0.2%–10.4%)	0.0% (10) (4.3%–32.1%)	20.0% (25) (8.4%–39.6%)	0.0% (19) (3.0%–19.8%)	4.8% (188) (2.4%–9.0%)	2.5% (80) (0.2%–9.2%)	6.0% (232) (3.5%–10.0%)	2.93 (0.58–14.80)	4.92% (244) (2.75%–8.48%)	5.88% (51) (1.41%–16.54%)	0.94 (0.27–3.33)
70+	1.7% (174) (0.3%–5.1%)	0.0% (31) (2.1%–13.1%)	0.0% (7) (5.0%–40.4%)	30.0% (10) (10.3%–60.8%)	0.0% (5) (5.5%–48.9%)	0.0% (121) (0.6%–3.7%)	0.0% (38) (1.8%–10.9%)	2.2% (136) (0.5%–6.6%)	— —	2.16% (139) (0.45%–6.44%)	0.00% (32) (2.01%–12.73%)	— —

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

[†]Adjusted odds ratios are based on a logistic regression including the health status as a covariate, estimated separately by age group.

^{††}Adjusted odds ratios are based on a logistic regression including the partner status as a covariate, estimated separately by age group.

CI = confidence interval.

Through age 59, vaginal intercourse in the past 90 days was higher among married men than men in any other relationship category, with the highest rates of vaginal intercourse being observed among married men aged 18–24 (95.83%) and 25–29 years (95.65%). For men in these two age groups, rates of vaginal intercourse were similar for both single men (23.96% and 23.91%, respectively) and men who were single and dating (60.87% and 59.26%, respectively). Across all age groups, vaginal intercourse in the past 90 days was more common among partnered men. Health status was not predictive of the occurrence of vaginal intercourse for men through age 59 years. However, for men aged 60 years and over, those with excellent to good health status reported the occurrence of vaginal intercourse in the past 90 days at rates twice as high (or higher) than those with fair to poor health status.

Anal Intercourse

The occurrence of insertive anal intercourse was considerably less common than that of vaginal intercourse across all age groups (Table 4). Those in the age groups from 25 through 49 years reported rates more than twice as high (13.2%–15.9%) as the other age groups (1.7%–6.0%). Although partnership status was predictive of anal intercourse only among men in the youngest age category (18–24 years), with partnered men reporting more anal intercourse (11.1%) than nonpartnered men (0.7%), there were some observable differences when the occurrence of anal intercourse was compared across relationship categories. Among men from the late 20s (25–29 years) through 50s, anal intercourse was more common among men who had a relationship partner or were single but dating than those who were married or single. Among men aged 60 years and older, anal intercourse rates were generally low (and nonexistent in many cases) with the exception of men who had a relationship partner with whom they did not live, for which anal intercourse was reported by 20.0% of men in their 60s and for 30.0% of men aged 70 years and older.

Same Gender Behaviors

Sexual behavior with other men was less common than comparable behaviors with women, with the highest proportion of men reporting having received oral sex from a man in the past 90 days being those men in their 50s (7.1%). Other age groups were less likely to report receiving oral sex

from a man, ranging from a low of <1% of men over age 70 years and 5.1% of men in their 40s. Giving oral sex to another man was also relatively less prevalent, with the highest rate of 7.1% among men in their 50s and the lowest rate being 1.3% of men in their 70s. Being the receptive partner in anal intercourse (measured as receiving a penis in one's anus) was the least frequently reported behavior in the past 90 days, most often reported by men in their 30s (2.4%) and 40s (2.8%) and least likely (<1%) to be reported by men in their 70s.

Frequency of Sexual Behaviors

Table 5 presents the frequency with which men, stratified by age, reported participation in specific sexual behaviors (solo masturbation, vaginal intercourse, and insertive anal intercourse), on average during a typical month over the past year. Table 6 presents a more in-depth analysis of these data by relationship and health status. Masturbation alone is the behavior for which there is the most sustainable pattern of frequent behavior over the first three decades of adulthood, with over 30% of men, through the 40s, reporting that they had masturbated alone on average more than two times per week during the past year, with masturbation frequency declining among each subsequent age cohort. Although masturbation frequency is somewhat similar among all men (regardless of relationship status), among married men in the youngest age category (18–24 years), vaginal intercourse was more frequent than masturbation. Among all men and across all categories of relationships, there is an observable decrease in the frequency of vaginal intercourse with increasing age. These data also suggest that anal intercourse, if a part of a man's sexual repertoire, is infrequent.

Discussion

Data from this study provide a foundation for understanding the contemporary rates of sexual behaviors among adult men in the United States, documenting that masturbation, oral intercourse, and vaginal intercourse are prevalent among men throughout most of their adult life. Several important trends become apparent as men age, and as functions of relationship type and physical health status. These data share some consistencies with those from the other two nationally representative studies of adult male sexual behavior, both of which were conducted within the past two decades [2–4]. However, some differences in the level of

Table 5 Frequency of men's sexual behaviors, stratified by age

Frequency of sexual behavior						
Age	N	Not in past year	A few times per year to monthly	A few times per month to weekly	2–3 times per week	≥4 times per week
		% Engaging in behavior (95% CI)				
Masturbation (solo)						
18–24	260	18.5% (14.2%–23.6%)	16.9% (12.8%–22.0%)	25.0% (20.1%–30.6%)	20.8% (16.3%–26.1%)	18.8% (14.5%–24.1%)
25–29	334	16.5% (12.9%–20.8%)	14.7% (11.3%–18.9%)	25.4% (21.1%–30.4%)	23.4% (19.1%–28.2%)	20.1% (16.1%–24.7%)
30–39	393	20.1% (16.4%–24.4%)	18.8% (15.3%–23.0%)	27.0% (22.8%–31.6%)	20.6% (16.9%–24.9%)	13.5% (10.4%–17.2%)
40–49	500	24.0% (20.5%–27.9%)	19.8% (16.5%–23.5%)	25.0% (21.4%–29.0%)	16.8% (13.8%–20.3%)	14.4% (11.6%–17.8%)
50–59	452	28.1% (24.1%–32.4%)	24.3% (20.6%–28.5%)	23.7% (20.0%–27.8%)	17.5% (14.2%–21.3%)	6.4% (4.5%–9.1%)
60–69	317	38.8% (33.6%–44.3%)	29.3% (24.6%–34.6%)	18.0% (14.1%–22.6%)	10.1% (7.2%–13.9%)	3.8% (2.1%–6.6%)
70+	179	53.6% (46.3%–60.8%)	23.5% (17.8%–30.2%)	14.0% (9.6%–19.9%)	7.3% (4.2%–12.1%)	1.7% (0.3%–5.0%)
Vaginal intercourse						
18–24	262	40.1% (34.3%–46.1%)	11.8% (8.4%–16.3%)	22.9% (18.2%–28.4%)	18.3% (14.1%–23.5%)	6.9% (4.3%–10.7%)
25–29	327	14.4% (11.0%–18.6%)	12.2% (9.1%–16.3%)	40.4% (35.2%–45.8%)	28.1% (23.5%–33.2%)	4.9% (3.0%–7.9%)
30–39	393	14.8% (11.6%–18.6%)	15.8% (12.5%–19.7%)	38.7% (34.0%–43.6%)	24.7% (20.7%–29.2%)	6.1% (4.1%–9.0%)
40–49	501	26.5% (22.9%–30.6%)	15.6% (12.6%–19.0%)	36.5% (32.4%–40.8%)	16.8% (13.7%–20.3%)	4.6% (3.0%–6.8%)
50–59	455	42.4% (38.0%–47.0%)	18.2% (15.0%–22.1%)	25.9% (22.1%–30.2%)	11.9% (9.2%–15.2%)	1.5% (0.7%–3.2%)
60–69	315	46.3% (40.9%–51.9%)	16.5% (12.8%–21.0%)	25.4% (20.9%–30.5%)	11.4% (8.3%–15.4%)	0.3% (–0.1%–2.0%)
70+	177	57.1% (49.7%–64.1%)	18.6% (13.6%–25.1%)	19.8% (14.5%–26.3%)	4.0% (1.8%–8.1%)	0.6% (–0.2%–3.5%)
Anal intercourse (insertive)						
18–24	266	89.1% (84.7%–92.3%)	7.5% (4.9%–11.4%)	2.6% (1.2%–5.4%)	0.4% (–0.2%–2.3%)	0.4% (–0.2%–2.3%)
25–29	332	73.2% (68.2%–77.7%)	22.0% (17.9%–26.8%)	2.4% (1.1%–4.8%)	1.2% (0.4%–3.2%)	1.2% (0.4%–3.2%)
30–39	393	75.6% (71.1%–79.6%)	21.4% (17.6%–25.7%)	2.3% (1.1%–4.4%)	0.3% (–0.1%–1.6%)	0.5% (0.0%–2.0%)
40–49	501	78.0% (74.2%–81.5%)	18.0% (14.8%–21.6%)	3.0% (1.8%–4.9%)	0.6% (0.1%–1.8%)	0.4% (0.0%–1.5%)
50–59	451	87.1% (83.7%–89.9%)	11.3% (8.7%–14.6%)	1.3% (0.5%–2.9%)	0.2% (–0.1%–1.4%)	0.0% (–0.2%–1.0%)
60–69	311	94.5% (91.4%–96.6%)	2.6% (1.2%–5.1%)	2.9% (1.4%–5.5%)	0.0% (–0.3%–1.5%)	0.0% (–0.3%–1.5%)
70+	173	97.7% (94.0%–99.3%)	2.3% (0.7%–6.0%)	0.0% (–0.4%–2.6%)	0.0% (–0.4%–2.6%)	0.0% (–0.4%–2.6%)

specificity between those studies and this one with regard to the measurement of sexual behaviors, and the limited nature of data it was possible to collect in this brief cross-sectional survey, present challenges to comparison.

An important finding in this study is that masturbation is a prevalent and frequent component of adult men's sexual behaviors, including men across various stages of life and those who are both with and without a relational partner. Most men through age 69 report having masturbated recently, and although it is the case that non-partnered men

reported higher rates of masturbation than partnered men, the majority of partnered men (>58%) through age 59 years reported recent masturbation. For those providing sexual health counseling to couples, it may be important to acknowledge male masturbation as a prevalent and somewhat frequent behavior, even among those who are married or in relationships.

These rates of masturbation are comparable with those identified in the 1992 NHSLs [2,3] for men aged 18–60 years, both in terms of the proportion reporting masturbation (although mea-

Table 6 Weighted frequencies of men's sexual behaviors by relationship status, stratified by age

		Relationship status							
		Single					Partnered		
Age	N	Not in past year	A few times per year to monthly	A few times per month to weekly	2–3 times per week	≥4 times per week	N	Not in past year	A few times per year to monthly
		% Engaging in behavior (95% CI)					% Engaging in behavior (95% CI)		
Masturbation (solo)									
18–24	139	15.1% (10.0%–22.1%)	15.1% (10.0%–22.1%)	23.0% (16.8%–30.7%)	22.3% (16.1%–30.0%)	24.5% (18.0%–32.3%)	97	16.5% (10.3%–25.2%)	21.6% (14.5%–30.9%)
25–29	74	9.5% (4.4%–18.5%)	6.8% (2.6%–15.2%)	31.1% (21.7%–42.4%)	23.0% (14.8%–33.8%)	29.7% (20.5%–41.3%)	49	10.2% (4.0%–22.2%)	12.2% (5.4%–24.6%)
30–39	91	15.4% (9.3%–24.3%)	11.0% (5.9%–19.2%)	31.9% (23.2%–42.0%)	26.4% (18.4%–36.3%)	15.4% (9.3%–24.3%)	74	14.9% (8.3%–24.9%)	14.9% (8.3%–24.9%)
40–49	171	9.9% (6.2%–15.4%)	20.5% (15.1%–27.2%)	28.7% (22.4%–35.9%)	18.13% (13.0%–24.6%)	22.8% (17.1%–29.7%)	87	31.0% (22.3%–41.4%)	16.1% (9.7%–25.3%)
50–59	193	21.8% (16.5%–28.1%)	17.6% (12.9%–23.6%)	28.0% (22.1%–34.7%)	22.8% (17.4%–29.2%)	9.8% (6.3%–14.9%)	83	31.3% (22.3%–42.0%)	22.9% (15.1%–33.1%)
60–69	80	36.3% (26.6%–47.2%)	21.3% (13.6%–31.5%)	20.0% (12.6%–30.1%)	15.0% (8.6%–24.6%)	7.5% (3.2%–15.7%)	44	38.6% (25.7%–53.4%)	36.4% (23.7%–51.2%)
70+	40	42.5% (28.5%–57.8%)	25.0% (14.0%–40.4%)	22.5% (12.1%–37.7%)	7.5% (1.9%–20.6%)	2.5% (–3.7%–14.0%)	19	36.8% (19.0%–59.1%)	15.9% (4.7%–39.4%)
Vaginal intercourse									
18–24	137	56.9% (48.6%–64.9%)	13.9% (9.0%–20.7%)	19.0% (13.2%–26.4%)	8.0% (4.4%–13.9%)	2.2% (0.5%–6.5%)	100	26.0% (18.4%–35.4%)	8.0% (3.9%–15.2%)
25–29	73	46.6% (35.6%–67.9%)	21.9% (13.9%–32.8%)	27.1% (19.4%–30.6%)	4.1% (0.9%–11.9%)	0.0% (–1.0%–6.0%)	48	20.8% (11.5%–34.4%)	10.4% (4.1%–22.6%)
30–39	91	39.6% (30.1%–49.8%)	24.2% (16.5%–34.0%)	23.1% (15.6%–32.8%)	1.7% (3.5%–15.3%)	5.5% (2.1%–12.5%)	77	15.6% (9.0%–25.5%)	6.5% (2.5%–14.7%)
40–49	174	48.9% (41.5%–56.2%)	18.4% (13.3%–24.8%)	22.4% (16.8%–29.2%)	8.0% (4.8%–13.1%)	2.3% (0.7%–6.0%)	87	29.9% (21.2%–40.2%)	9.2% (4.5%–17.3%)
50–59	189	67.7% (60.8%–74.0%)	14.9% (10.4%–20.6%)	11.6% (7.8%–17.1%)	5.3% (2.8%–9.6%)	0.5% (–0.2%–3.2%)	85	34.1% (24.9%–44.7%)	10.6% (5.5%–19.1%)
60–69	81	86.4% (77.11–92.4%)	8.6% (4.0%–17.0%)	3.7% (0.8%–10.8%)	1.2% (–0.4%–7.3%)	0.0% (–0.9%–5.4%)	44	27.3% (16.2%–42.0%)	11.4% (4.5%–24.4%)
70+	38	81.6% (66.3%–91.1%)	5.3% (0.5%–18.2%)	13.2% (5.3%–27.8%)	0.0% (–1.8%–10.9%)	0.0% (–1.8%–10.9%)	19	26.3% (11.5%–49.1%)	10.5% (1.7%–32.6%)
Anal intercourse (insertive partner)									
18–24	141	93.6% (88.2%–96.8%)	4.3% (–3.1%–85.1%)	1.4% (–0.3%–99.2%)	0.0% (–0.1%–99.7%)	0.7% (0.0%–100.0%)	102	84.3% (75.9%–90.2%)	10.8% (6.0%–18.4%)
25–29	74	87.8% (78.3%–93.7%)	9.5% (–2.1%–87.0%)	1.4% (–0.6%–98.2%)	1.4% (–0.1%–99.7%)	0.0% (–0.1%–99.7%)	48	58.3% (44.3%–71.2%)	33.3% (23.6%–47.5%)
30–39	90	73.3% (63.3%–81.4%)	24.4% (0.2%–91.6%)	2.2% (–1.3%–95.5%)	0.0% (–0.1%–99.6%)	0.0% (0.0%–100.0%)	78	62.8% (51.7%–72.7%)	26.9% (18.3%–37.7%)
40–49	172	79.1% (72.4%–84.5%)	14.0% (–1.3%–89.0%)	4.7% (–0.7%–97.5%)	1.2% (–0.3%–99.1%)	1.2% (–0.1%–99.8%)	87	59.8% (49.3%–69.5%)	32.2% (23.3%–42.6%)
50–59	193	85.5% (70.8%–89.8%)	13.5% (–1.5%–88.2%)	1.0% (–0.8%–97.5%)	0.0% (–0.1%–90.8%)	0.0% (0.0%–100.0%)	82	78.0% (67.9%–95.7%)	17.1% (10.3%–26.8%)
60–69	80	97.5% (90.8%–99.8%)	2.5% (–3.4%–84.2%)	0.0% (–0.2%–99.5%)	0.0% (0.0%–100.0%)	0.0% (0.0%–100.0%)	44	88.6% (75.6%–95.5%)	2.3% (–0.7%–12.9%)
70+	38	97.4% (85.3%–100.7%)	2.6% (–3.4%–84.3%)	0.0% (–0.2%–99.5%)	0.0% (0.0%–100.0%)	0.0% (0.0%–100.0%)	14	78.6% (51.7%–93.2%)	21.4% (6.8%–48.3%)

CI = confidence interval.

sured within the past year in the NHSLs) and the frequency of masturbation. Additionally, masturbation rates among older men are comparable with those documented by Lindau [4]. However, her team found no relations between health and masturbation among the oldest men in the sample, whereas our data found that men with fair to poor health were less likely to report recent masturbation than those men in their age cohort with better physical health.

Our data also indicate that oral sex with female partners is a common behavior, with the number of men who reported giving oral sex to women being almost as high as the number of men who reported receiving oral sex from women. We were explicit with our measurement of both the nature of the activity (giving or receiving) and also with regard to the gender of the sexual partner for oral sex. As a result, these data may provide more specific insights into the nature of men's oral sex

Table 6 Continued

			Married					
A few times per month to weekly	2-3 times per week	≥4 times per week		Not in past year	A few times per year to monthly	A few times per month to weekly	2-3 times per week	≥4 times per week
			N	% Engaging in behavior (95% CI)				
26.8%	20.6%	14.4%	23	52.2%	8.7%	30.4%	8.7%	0.0%
(10.0%–36.4%)	(13.7%–29.8%)	(8.7%–22.7%)		(33.0%–70.8%)	(1.2%–28.0%)	(15.4%–51.1%)	(1.2%–28.0%)	–(2.6%–16.9%)
28.6%	20.4%	28.6%	20	20.5%	18.1%	22.9%	23.8%	14.8%
(17.8%–42.5%)	(11.3%–33.8%)	(11.8%–42.5%)		(15.5%–27.5%)	(13.4%–23.9%)	(17.7%–29.0%)	(18.5%–30.0%)	(10.6%–20.2%)
28.4%	23.0%	18.9%	227	23.8%	23.3%	24.7%	17.6%	10.6%
(19.3%–39.6%)	(14.8%–33.8%)	(11.5%–29.4%)		(18.7%–29.8%)	(18.3%–29.3%)	(19.5%–30.7%)	(13.2%–23.1%)	(7.2%–15.3%)
19.5%	18.4%	14.9%	241	31.5%	20.7%	24.5%	15.4%	7.9%
(12.5%–20.2%)	(11.5%–27.9%)	(8.8%–24.0%)		(26.0%–37.7%)	(16.1%–26.3%)	(19.5%–30.3%)	(11.3%–20.5%)	(5.0%–12.0%)
28.9%	12.0%	4.8%	175	33.1%	32.6%	16.6%	14.3%	3.4%
(20.2%–39.5%)	(6.5%–21.0%)	(1.5%–12.1%)		(26.6%–40.4%)	(26.1%–39.8%)	(11.7%–22.8%)	(9.8%–20.3%)	(1.4%–7.4%)
6.8%	13.6%	4.5%	191	40.3%	30.9%	19.9%	7.3%	1.6%
(1.7%–18.9%)	(6.0%–27.1%)	(0.4%–16.0%)		(33.6%–47.4%)	(24.8%–37.8%)	(14.8%–26.2%)	(4.3%–12.0%)	(0.3%–4.7%)
10.5%	36.8%	.0%	119	61.3%	23.5%	10.9%	2.5%	1.7%
(1.7%–32.6%)	(19.0%–59.1%)	–(3.0%–10.8%)		(52.4%–69.6%)	(16.8%–31.9%)	(5.4%–17.9%)	(0.5%–7.5%)	(0.1%–6.3%)
30.0%	26.0%	10.0%	24	4.2%	12.5%	16.7%	45.8%	20.8%
(21.9%–39.6%)	(18.4%–35.4%)	(5.3%–17.5%)		–(0.9%–21.9%)	(3.5%–31.8%)	(9.1%–36.5%)	(27.9%–64.9%)	(8.8%–40.9%)
36.4%	27.1%	6.3%	205	1.6%	9.3%	46.3%	37.1%	5.9%
(23.4%–49.6%)	(15.5%–41.1%)	(1.5%–17.5%)		(0.3%–4.4%)	(5.9%–14.1%)	(38.6%–53.2%)	(30.8%–43.9%)	(3.3%–10.0%)
32.5%	39.0%	6.5%	224	4.5%	15.6%	47.3%	26.8%	5.8%
(23.0%–43.6%)	(28.8%–50.1%)	(2.5%–14.7%)		(2.3%–8.1%)	(11.4%–21.0%)	(40.9%–63.9%)	(21.4%–33.0%)	(3.3%–9.8%)
24.1%	25.3%	11.5%	211	9.1%	16.2%	51.0%	19.9%	3.7%
(16.3%–34.2%)	(17.3%–35.4%)	(5.2%–20.1%)		(6.1%–13.5%)	(12.0%–21.4%)	(44.8%–57.3%)	(15.3%–25.4%)	(1.9%–7.0%)
31.8%	18.8%	4.7%	180	20.6%	25.0%	38.3%	15.0%	1.1%
(22.8%–42.3%)	(11.6%–28.5%)	(1.5%–11.9%)		(15.30%–27.1%)	(19.2%–31.8%)	(31.5%–45.5%)	(10.5%–21.0%)	(0.0%–4.2%)
20.5%	38.6%	2.3%	189	33.9%	21.2%	35.4%	9.5%	0.0%
(10.9%–34.7%)	(23.7%–53.4%)	–(3.7%–12.9%)		(27.5%–40.9%)	(15.9%–27.6%)	(29.0%–42.5%)	(6.0%–14.6%)	–(0.4%–2.4%)
63.2%	0.0%	0.0%	120	54.2%	24.2%	15.0%	5.8%	0.8%
(40.9%–81.0%)	–(3.0%–19.8%)	–(3.0%–19.8%)		(45.3%–62.8%)	(17.3%–32.6%)	(9.6%–22.6%)	(2.6%–11.8%)	–(0.3%–5.0%)
3.9%	1.0%	0.0%	23	82.6%	13.0%	4.3%	0.0%	0.0%
(1.2%–10.0%)	(0.4%–5.9%)	(0.7%–4.4%)		(62.3%–93.6%)	(3.7%–33.0%)	–(0.9%–22.7%)	–(2.6%–16.9%)	–(2.6%–16.9%)
8.3%	0.0%	0.0%	208	71.6%	24.0%	1.0%	1.4%	1.9%
(2.8%–20.1%)	–(1.4%–0.8%)	–(1.4%–8.8%)		(66.1%–77.3%)	(18.7%–30.3%)	(0.0%–3.7%)	(0.3%–4.4%)	(0.6%–5.0%)
6.4%	1.3%	2.6%	226	80.5%	18.1%	0.9%	0.0%	0.4%
(2.4%–14.5%)	–(0.5%–7.6%)	(0.2%–9.4%)		(74.9%–85.2%)	(13.6%–23.7%)	(0.0%–3.4%)	–(0.3%–2.0%)	–(0.2%–2.7%)
6.9%	1.1%	0.0%	243	83.5%	16.0%	0.4%	0.0%	0.0%
(2.9%–14.5%)	(0.4%–6.8%)	–(0.8%–5.1%)		(78.3%–87.7%)	(11.9%–21.2%)	–(0.2%–2.5%)	–(0.3%–1.9%)	–(0.3%–1.9%)
4.9%	0.0%	0.0%	176	93.8%	6.3%	0.0%	0.0%	0.0%
(1.5%–12.3%)	–(0.9%–5.4%)	–(0.9%–5.4%)		(89.0%–96.6%)	(3.4%–11.0%)	–(0.4%–2.6%)	–(0.4%–2.6%)	–(0.4%–2.6%)
9.1%	0.0%	0.0%	188	94.1%	2.7%	3.2%	0.0%	0.0%
(3.0%–21.7%)	–(1.5%–9.6%)	–(1.5%–9.6%)		(89.7%–96.8%)	(1.0%–6.2%)	(1.3%–6.9%)	–(0.4%–2.4%)	–(0.4%–2.4%)
0.0%	0.0%	0.0%	121	100.0%	0.0%	0.0%	0.0%	0.0%
–(3.6%–25.1%)	–(3.6%–25.1%)	–(3.6%–25.1%)		(96.3%–100.6%)	–(0.6%–3.7%)	–(0.6%–3.7%)	–(0.6%–3.7%)	–(0.6%–3.7%)

behaviors than those obtained in other nationally representative studies.

Vaginal intercourse is the most common partnered sexual behavior among men throughout much of the lifespan, although reported by more men at younger ages and with a progressive decline in rates and frequency beginning at around age 50. These data suggest that having a relationship partner is predictive of the occurrence of recent vaginal intercourse across all age groups,

but that having a partner is a particularly important predictor among younger men. Insertive anal intercourse appears to have increased in all age groups when compared with the NHSLs data [2,3]. In fact, men in some age groups reported higher rates of insertive anal intercourse in the past three months than were reported by similar NHSLs age groups in the past year [2,3]. In this article we focused on insertive anal intercourse for the primary analyses. Given the nature of our

analyses by relationship status and health status, and that reports of receptive anal intercourse were infrequent, such analyses for receptive anal intercourse would have been less meaningful. However, in other reports from NSSHB [41], we provide more detailed summaries of receptive anal intercourse, which show that although being the receptive partner in anal intercourse is infrequent among men (reported as having occurred in their lifetime by 6.7% of all men ages 14–94), it does occur and remains among those behaviors for which more research would be meaningful. Additionally, as was recently advocated in an article by McBride and Fortenberry [42], we should also consider research that documents other non-penile or non-insertive anorectal behaviors of men, particularly those men whose behavioral repertoire is exclusively or primarily heterosexual. More research in this area could advance our understanding of these behaviors and their clinical implications.

Although no nationally representative sexual behavior study to date has oversampled men who identify as gay or bisexual, including ours, the findings of this study are consistent with those of Laumann [2,3] and Kinsey [1], in that the proportions of men who reported same gendered sexual interactions were higher than the proportions of men who identify their sexual orientation as gay or bisexual. As methods for assessing representative samples of gay and bisexual men (and women) advance, it will be beneficial to have comprehensive data on their sexual behaviors so that valid conceptualizations of variations in human sexual behavior across sexually diverse communities can be understood.

Although this is only the second nationally representative scientific study specifically focused on sexual behavior that included an expansive range of men across various ages of adulthood, and the second to collect such sexual behavior data from older men, its methods present both strengths and limitations. Strengths of this study include the expansive range of ages across the adult lifespan and the specificity with which behaviors were assessed. Additionally, these data were able to be collected with the advantages presented by advances in Internet research methods. Limitations include the restricted number of measures, with little detailed information on sexual motivations, and little on sexual dysfunctions. As with other nationally representative studies of adult sexual behavior, the methods of this study do not allow for an in-depth analysis of behaviors among men who identify as gay or bisexual and those without an established

household, particularly those who were institutionalized or homeless at the time of the study. Lastly, this study sought to collect data on those sexual behaviors that are more commonly assessed by researchers (in order to provide for comparisons with past studies of this nature). Additionally, we assessed behaviors specifically for the extent to which they are more closely linked to the nation's health priorities for issues like HIV, other STI and pregnancy, resulting in the availability of contemporary rates of behavior that provide important foundations for health-related interventions. Therefore, we did not include measures of some other aspects of men's sexual repertoires such as the use of sexual toys. However, these data, when combined with other recent data from nationally representative [38,43] and other studies [44] focused specifically on men's use of vibrators, and which show that men's use of them is common, associated with other health promoting behaviors, and associated with improved sexual function and sexual satisfaction, collectively advance our contemporary understanding of the range of behaviors that constitute men's sexual lives.

Conclusions

These new data provide contemporary rates of sexual behavior among adult men in the United States, indicating that a range of sexual behaviors are prevalent and frequent across the lifespan, particularly masturbation and intercourse. These updated baseline rates of sexual behavior will be useful for those designing and delivering health-related interventions and other services to men and their sexual partners.

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