**A comparative study between New York City and national adults’ sexual behaviors**

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**Research question**

Are there differences between NYC and National sexual behaviors and across demographic characteristics?

**Study aims**

* Descriptive comparisons between NYC and NHANES
* Identify differences across several demographic characteristics

**Framing**

Unconscious biases in sexual risk characterization based on demographic and physical characteristics, like race/ethnicity, gender, age, and body mass index (BMI) may influence sexual history taking and screening practices of obstetric and gynecological and primary care providers in the US. Higher rates of STIs/HIV in urban settings such as NYC than the US as a whole, helpful to compare sexual behaviors in NYC to US as a whole. In this paper we present age-standardized reports on sexual behaviors by race/ethnicity, gender and BMI comparing the NYC and NHANEs data.

**Methods**

Data

We used data from the 2013-2014 New York City Health and Nutrition Examination Survey (NYC HANES) and 2011-2014 National Health and Nutrition Survey (NHANES) data, combining 2011-2012 and 2013-2014 to improve precision among smaller demographic categories (1). NYC HANES and NHANES are population-based, cross-sectional surveys, and NYC HANES was modeled after NHANES (2, 3). NYC HANES used a three-stage cluster sampling design of the population of civilian, non-institutionalized NYC residents ages 20 or older, with a survey sample of 1,524 participants, for an overall response rate of 36% (2). NHANES used a four-stage cluster sampling design of the civilian, non-institutionalized resident population of the United States (4). The response rate for NHANES 2011-2012 survey was 72.6% and 71.0% for the 2013–2014 survey (5). In both NYC HANES and NHANES, interviews were face-to-face and included an audio computer-assisted self-interview (ACASI) portion on sensitive topics, which included sexual behaviors. .

*Measures and Analysis*

The surveys included questions on lifetime prevalence of sex by sexual behavior: vaginal, oral (performing or receiving), and anal, and by sexual partner type (same-sex and/or opposite-sex). For each behavior, those who reported having ever engaged in the behavior, were asked the number of sexual partners in the past year. We categorized number of partners in past year as 0, 1 or 2 or more. The number of anal sexual partners in the past year was only available in NYC HANES. We stratified lifetime prevalence and past year sex partners for each sexual behavior by sex (male/female), age (20-29, 30-39, 40-49, 50-59, 60-69), race/ethnicity and body mass index (BMI). NHANES only asked questions on number of sex partners in the past year to the population under age 59 (6). Thus, we restricted the NYC HANES sample to participants aged 20 to 59, for most analyses, but included participants up to 69 in NYC for the age stratified measures. We accounted for complex survey design and nonresponse in the NYC HANES dataset using the ACASI weight (7) and for NHANES the Mobile Examination Center exam weight used to combine multiple survey cycles(8). All measures were age standardized to the 2010 US Census population (9). All analysis was conducted using Stata version 15 (10). The final analytic sample of NYC HANES was 1,393 and for NHANES 7,697 participants. We present lifetime prevalence and prevalence of numbers of sex partners in the past year with 95% confidence intervals by type of sex act and demographic characteristic comparing NYC to national reports.

**Results**

Table 1 shows the sample size and weighted characteristics of the participants of NYC HANES and NHANES. In both surveys, more than 90% of the participants reported ever having vaginal sex, more than 77% reported ever having oral sex, 12.7% of the participants in NYC reported ever having same-sex sex compared with 8.1% at the national level, and 37.3% of participants in NYC report ever having anal sex compared to 42.1% at the national level. Across vaginal, oral and same-sex sex, participants in NYC reported higher number of past-year partners than at the national level.

*Reports by sex*

Figure 1 shows the age-standardized distribution of lifetime prevalence of vaginal, oral and/or same-sex sex in NYC and at the national level by sex. Lifetime prevalence of vaginal, oral and same-sex sex were similar between NYC and nationally and between females and males. At the national level, a higher proportion of both males and females who reported ever having vaginal sex reported zero partners in the past year compared to NYC (0.3%; 95%CI: 0.1-1.4% males, 2.9%; 95%CI: 2.5-5.5% females nationally compared to 12.3%; 95%CI: 1.5-14.4 % males and 13.2%; 95%CI: 13.2-17.1% females in NYC). In NYC, the distribution of number of vaginal sex partners were different between males and females; more males reported two or more partners (29.1%; 95%CI: 13.2-20.2% males versus 16.4%; 95%CI: 13.2-20.2% females) while more females reported one partner (80.7%; 95%CI: 76.6-84.2% females versus 70.6%; 95%CI: 65.1-75.5% males). At the national level, the proportion of no past-year oral sex partners was lower than in NYC for both females and males. Among participants who reported ever having same-sex sex, a higher proportion of NYC males reported one or more partners than nationally (81.6%; 95%CI: 68.8-89.9% versus 52.0%; 95%CI: 41.4-62.5%, respectively). In NYC, among males and females who report ever having anal sex, the number of past-year anal partners is similar (36.4%: 95%CI: 28.8-44.8% males versus 35.3%; 95%CI: 29.2-41.8 % females report one and 7.9% 95%CI: 4.7-13.1% males versus 2.4%; 95%CI: 0.8-7.0% report two or more anal sex partners).

*Reports by age*

Figure 2 shows the age-standardized distribution of lifetime prevalence of vaginal, oral and/or same-sex sex in NYC and nationally by age group. Overall, the distribution of sexual behaviors and reported number of partners follows a similar distribution by age in NYC and at the national level. The main difference was among those aged 50-59. A higher proportion of participants in this age group in NYC reported one vaginal sex partner (88.3%; 95%CI:81.7-92.8%) and/or one oral sex partner (66.1%; 95%CI:55.1-75.6%) than at the national level (60.2%; 95%CI: 54.6-65.6% and 41.1%; 95%CI:41.1-36.1%, respectively). In the case of NYC, where it was possible to observe reported number of past-year partners for participants ages 60-69, the proportion of participants who report at least one partner is similar to those ages 50-59; among those who had ever reported vaginal sex, 81.4%; 95%CI: 70.0-89.2% of 60-69 year olds reported one partner, similarly for oral sex the majority (63.8%; 95%CI:50.2-75.5%) reported one partner, and for same-sex sex (15.1%; 95%CI: 5.1-37.0%) reported one partner). As age increases, a higher proportion or participants in NYC report having zero anal partners in the past year.

*Reports by race/ethnicity*

Figure 3 shows the age-standardized distribution of lifetime prevalence of vaginal, oral same-sex and/or anal sex in NYC and nationally by race/ethnicity. Overall, there was a similar distribution in NYC and at the national level, and across race/ethnicity. Similarly, reported past-year vaginal and oral sex partners were similar across race/ethnicity, and between NYC and the national average.

*Reports by BMI*

Lastly, Figure 4 shows the age-standardized distribution of lifetime prevalence of vaginal, oral, same-sex and/or anal sex in NYC and nationally by BMI. There were no differences between reported lifetime prevalence of vaginal, oral, same-sex and/or anal sex in NYC and at the national level, and across BMI levels. The number of reported past-year sex partners by sexual behavior was also similar across geographies and BMI levels.

**Discussion/Conclusion**

* Slight differences by gender and age. Older people still active. More reported same sex in NYC vs national.
* Small differences between NYC and National by age and gender
* Anal sex fairly common in women (may have implications for STI screening – should be included in sexual history taking)
* No discernible differences across race/ethnicity or BMI / National/NYC

**Table 1: Characteristics of participants in NYC (2013-2014) and National (2011-2014)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | NYC | | National | |
|  | Sample size | Frequency | Sample size | Frequency |
| Female | 1,393 | 54.6% | 7,697 | 50.9% |
| Age group | 1,393 |  | 7,697 |  |
| 20-29 |  | 25.0% |  | 25.4% |
| 30-39 |  | 22.0% |  | 23.8% |
| 40-49 |  | 19.2% |  | 25.4% |
| 50-59 |  | 18.6% |  | 25.4% |
| 60-69 |  | 15.2% |  | - |
| Race/ethnicity | 1,393 |  | 7,697 |  |
| Asian |  | 13.9% |  | 5.7% |
| Black |  | 22.2% |  | 12.3% |
| Hispanic |  | 27.2% |  | 17.0% |
| White |  | 34.0% |  | 62.1% |
| Other |  | 2.7% |  | 2.9% |
| BMI | 1,345 |  | 7,362 |  |
| <25 |  | 34.1% |  | 31.3% |
| 25-29 |  | 34.8% |  | 32.4% |
| >30 |  | 31.1% |  | 36.3% |
| Lifetime prevalence |  |  |  |  |
| Vaginal sex | 1,153 | 92.7% | 6,427 | 95.1% |
| Oral sex | 1,150 | 77.3% | 6,413 | 86.2% |
| Same-sex sex | 1,152 | 12.7% | 6,424 | 8.1% |
| Anal Sex | 1,148 | 37.7% | 6,415 | 42.1% |
| Vaginal sex partners in past year among those reporting ever vaginal sex | 861 |  | 6,008 |  |
| 0 |  | 2.1% |  | 13.7% |
| 1 |  | 78.6% |  | 69.5% |
| ≥2 |  | 19.2% |  | 16.8% |
| Oral sex partners in past year among those reporting ever oral sex | 773 |  | 5,233 |  |
| 0 |  | 17.5% |  | 25.2% |
| 1 |  | 70.2% |  | 62.8% |
| ≥2 |  | 12.3% |  | 12.0% |
| Same-sex sex partners in past year among those reporting ever same-sex sex | 157 |  | 507 |  |
| 0 |  | 50.6% |  | 63.5% |
| 1 |  | 28.7% |  | 22.4% |
| ≥2 |  | 20.7% |  | 14.1% |
| Anal sex partners in past year among those reporting ever same-sex sex | 430 |  |  |  |
| 0 |  | 65.6% |  | - |
| 1 |  | 30.7% |  | - |
| ≥2 |  | 3.8% |  | - |

**\***Weighted characteristics. Characteristics for sex, race/ethnicity, and BMI are age-adjusted.

**Figure 1: Lifetime age-standardized prevalence and past-year number of sex partners by type of sexual behavior in NYC (2013-2014) and National (2011-2014) by sex.**

**Figure 2: Lifetime prevalence and past-year number of sex partners by type of sexual behavior in NYC (2013-2014) and National (2011-2014) by age group.**

**Figure 3: Lifetime age-standardized prevalence and past-year number of sex partners by type of sexual behavior in NYC (2013-2014) and National (2011-2014) by race/ethnicity.**

**Figure 4: Lifetime age-standardized prevalence and past-year number of sex partners by type of sexual behavior in NYC (2013-2014) and National (2011-2014) by BMI.**

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