HHS Public Access

Author manuscript

J Adolesc Health. Author manuscript; available in PMC 2017 October 01.

Published in final edited form as:

J Adolesc Health. 2016 October ; 59(4): 429–437. doi:10.1016/j.jadohealth.2016.05.009.

Teen pregnancy among sexual minority women: Results from the National Longitudinal Study of Adolescent to Adult Health

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Abstract

Purpose—To explore the association between sexual orientation and teen pregnancy (before age 20) in a U.S. nationally representative cohort of young adult females aged 24–32.

Methods—5,972 participants in Waves I and IV of the National Longitudinal Study of Adolescent to Adult Health were included. Self-reported sexual orientation identity was categorized as heterosexual, and three sexual minority [SM] groups: mostly heterosexual; bisexual; and lesbian [combining 'mostly homosexual' & '100% homosexual']. Stepwise multivariate logistic regression models were fit to compare odds of teen pregnancy, and timing of teen pregnancy, between heterosexual and sexual minority [SM] groups, adjusting for sociodemographic characteristics, sexual victimization history, and sexual risk behaviors.

Results—After adjusting for sociodemographics and sexual victimization, bisexual women had significantly higher odds than heterosexual peers of teen pregnancy (OR=1.70; 95% CI=1.05, 2.75); this association was marginally significant after adjusting for sexual risk behaviors. Bisexuals were also more likely to have an early (before age 18) teen pregnancy (OR=2.04; 95% CI=1.17, 3.56). In contrast, lesbian women were significantly less likely to have a teen pregnancy than heterosexual (OR=0.47; 95% CI=0.23, 0.97), mostly heterosexual (OR=0.46; 95% CI=0.21, 0.99), and bisexual (OR=0.29; 95% CI=0.12, 0.71) women in final models.

Conclusions—Expanding upon extant literature, we found opposing risk patterns for teen pregnancy between bisexual and lesbian women, likely due to distinct patterns of sexual risk taking. Findings suggest that SM-inclusive teen pregnancy prevention efforts tailored to meet the unique needs of SM young women, particularly bisexuals, are needed.

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Everyone who contributed significantly to this work has been acknowledged. The authors report no conflicts of interest.

Preliminary findings were presented as an oral presentation at the Adolescent Pregnancy Prevention Campaign of North Carolina (APPCNC; now known as Shift NC) Annual meeting in June 2014, and as a poster presentation at the Population Association of America 2015 Annual Meeting in May 2015.

Keywords

Pregnancy in adolescence; Sexual Minority Females; Sexual Orientation; Sexual Behavior; National Longitudinal Study of Adolescent to Adult Health; Longitudinal study

Relatively little is known about the sexual and reproductive health of sexual minority women, particularly during adolescence and young adulthood. Although limited, evidence suggests that heterosexual vaginal sex is common among lesbian and bisexual-identified females, and, when sexual minority women do engage in vaginal intercourse their behavior may be riskier (e.g., earlier, more sexual partners; inconsistent contraception). [12–8] Several studies also report increased risk for teen pregnancy (defined as a pregnancy before age 20) among SM women (Table 1). However, existing literature is sparse and plagued by methodological limitations and inconsistent findings. Three studies that used regional Youth Risk Behavior Survey(YRBS) data (1995–2001 Massachusetts survey; 2005–2009 New York City survey; 1987 wave of the Minnesota Adolescent Health Survey) found that self-identified lesbian or bisexual adolescents (grouped together) had significantly higher odds of ever having been pregnant.[9,10,11] Another YRBS study (pooled 2005 and 2007 YRBS across 13 different state/metropolitan areas)[7] further disaggregated findings by identity, finding that bisexual, but not lesbian, adolescents had significantly higher adjusted odds of a teen pregnancy compared to heterosexual peers. However, SM groups did not differ from each other.

Studies offering national estimates of the association between sexual orientation and teen pregnancy have yielded mixed findings. Charlton and colleagues (2013) compared the two national, non-representative, intergenerational cohorts of nurses (aged 31–48) in the Nurses' Health Study (NHS; 1995) and their daughters (aged 20–25) in the Growing Up Today Study (GUTS; 2007), separating bisexuals and lesbians in analyses. In the NHS, bisexual-identified women had the highest proportion of teen pregnancies and lesbian-identified had the lowest; each differed – in opposite directions- from heterosexuals. However, among their daughters, "completely heterosexual" women (identified as heterosexual and exclusively partnered with men) had the lowest risk, and those identified as heterosexual yet had a history of same-sex sexual partners had the highest risk (with lesbian and bisexual falling in between). In contrast, a study of 15–20 year old women in the nationally-representative 2006–2010 NSFG found that, despite a slightly higher proportion of bisexual-identified women ever having been pregnant compared with lesbians and heterosexuals, differences were not significant after adjustment for demographics.[11]

Understanding these mixed findings is complicated by methodological differences that limit cross-study comparisons. The NHS and GUTS studies used different identity measures, possibly contributing to distinct findings. Theteen pregnancy prevalence observed in the NSFG cohort was substantially higher than in the NHS and GUTS cohorts, despite the fact that teen pregnancy rates in the United States had largely declined between when the NHS and GUTS participants were aged 15–20 (1962–1984, and 2002, respectively), and when the 15–20 year old NSFG cohort was studied (2006–2010).[12,13] In discussing the low teen pregnancy prevalence observed in the NHS and GUTS, the authors noted the non-

representativeness of the samples. Substantially higher overall rates of hormonal contraception use (before age 20) in the GUTS cohort compared with the NSFG further highlights between-cohort differences in teen pregnancy likelihood, confirming the cohorts are not comparable.

Further limitations exist in this literature. Because many of these studies relied on cross-sectional assessments when respondents were still in high school, they present an incomplete picture of teenage pregnancy risk. Seventy three percent of teen pregnancies occur among 18–19 year olds who have likely completed high school.[14] However, a large proportion of those surveyed had yet to age out of their teenage years. Therefore existing studies likely missed a large number of pregnancies occurring beyond the data collection period. Similarly, no studies have explored whether *timing* of teen pregnancy differs by sexual orientation, precluding the ability to develop interventions targeted at high risk periods, nor have any studies accounted for socioeconomic status (SES) with more than a single SES indicator (e.g., parental educational attainment), despite the strong link between SES and teen pregnancy (see the review by Penman-Aguilar and colleagues [2013]).[15] Finally, few existing studies have compared SM groups to each other, instead comparing minority groups only to heterosexuals, failing to consider whether teen pregnancy risk differs *within* sexual minority groups.

The present study addresses these limitations by examining the association between sexual orientation and the odds and timing of teen pregnancy among females in the National Longitudinal Study of Adolescent to Adult Health (Add Health). To our knowledge, this is the first test of this association using a nationally-representative sample, not recruited on the basis of their sexual orientation, who have 'aged out' of the period of teen pregnancy risk.

METHODS

Sample

We use data from Add Health, an ongoing prospective study of a nationally representative probability sample of adolescents in grades 7–12 during the 1994–1995 school year (see Harris [2013] for study design details).[16] To date, one in-school and four in-home interviews have been completed; data for present analyses came from the Wave IV in-home interview (2008; respondents aged 24–32) and Wave I/baseline. Add Health procedures were approved by the University of North Carolina, Chapel Hill IRB. Present analyses were deemed exempt.

Inclusion criteria for the current study were participation in Waves I and IV (n=15,701), valid sampling weight (n=14,785), female biological sex (n=7,857), age of vaginal sexual debut at 19 or younger (n=6,364), and non-missing data on analytic variables (n=5,972).

Measures

Teen pregnancy—A complete pregnancy history was collected at Wave IV. Teen pregnancy was defined as having a pregnancy, regardless of outcome, that ended before age 20. *Timing of teen pregnancy* was categorized as 'no pregnancy' (referent), 'early' (before age 18) or 'late' (ages 18–19); *Number of teen pregnancies* was categorized as 1, 2, and ≥3.

Sexual orientation—At Wave IV, respondents were asked to choose "*the description that best fits how you think about yourself: 100% heterosexual (straight); mostly heterosexual (straight), but somewhat attracted to your own sex; bisexual, that is, attracted to men and women equally; mostly homosexual (gay), but somewhat attracted to people of the opposite sex; 100% homosexual (gay); or not sexually attracted to either males or females."* Those who reported "not sexually attracted" were dropped (1.2%, n=71), and "100% homosexual" and "mostly homosexual" were collapsed to form a single group (subsequently referred to as 'lesbian')[a] resulting in four sexual orientation groups: heterosexual (referent), mostly heterosexual, bisexual, and lesbian.

***Covariates.* (self-reported at Wave I/adolescence, unless otherwise indicated)**

—Race/ethnicity, categorized as non-Hispanic white (referent), Hispanic (any race), non-Hispanic black, and non-Hispanic other. **Age at Wave IV** was a continuous variable. **Family structure,** categorized as living with two biological parents (referent), other two parent household, single parent, and all other structures. **Parental education attainment** was the highest level obtained by either of the respondents' parents or caregivers (less than high school; high school graduate/general education diploma; some college or post-high school business, trade, or vocational school; college graduate or higher [referent]). **Neighborhood poverty**, the proportion of families in the respondents' Census block group with dependents younger than 18 years and income below the federal poverty level (FPL) in 1989, was categorized as low (<11.6% of families below FPL; referent), medium (between 11.6% and 23.9% below FPL), and high (>23.9% below FPL).[17] **Neighborhood urbanicity** was dichotomized as completely urbanized or not. Finally, **parent-adolescent relationship quality** was included based on its known association with sexual risk (e.g., delayed sexual debut, increased contraception use),[18–21] as well as previous findings that sexual minorities tend to report worse parental relationship quality compared to their heterosexual counterparts—potentially stemming from family rejection or conflict related to the adolescents' sexual orientation.[22] This measure was constructed from respondents' ratings of closeness, communication satisfaction, overall relationship satisfaction, and the extent to which they felt their parent was warm and loving toward them. If two residential parents, responses were averaged to form a single score; higher scores indicate more closeness.

History of sexual victimization—To account for the potentially confounding effect of sexual victimization, three measures were included: **Childhood sexual abuse** (CSA; "*did a parent or other adult caregiver touch you in a sexual way, force you to touch him or her in a sexual way, or force you to have sexual relations?"*), dichotomized as never/≥1 times before age 18; **Coerced sex** (ever "*forced, in a nonphysical way, to have any type of sexual activity against your will?");* and **physically-forced sex** (ever "*physically forced to have sexual intercourse against your will?"),* both limited to occurrences outside of parent/caregiver relationships. To avoid issues of temporality, measures were restricted to events that first occurred before age 20.

[a]Only 36 women (0.6%) identified as "100% homosexual" and 41 (0.7%) as "mostly homosexual." The two groups do not differ on sexual risk variables or on most demographics. Thus, we combined "100%" and "mostly homosexual" (labeled as 'lesbian' in subsequent text) to increase statistical power.

Sexual risk behaviors—To account for more proximal determinants of teen pregnancy, we adjusted for several sexual risk behaviors, all self-reported at Wave IV: **Age at first vaginal intercourse** (AFVI), was continuously coded. **Effective contraception** (dichotomized effective/ineffective) was determined by whether the pregnancy was intended (“*Thinking back to the time just before this pregnancy with [initials], did you want to have a child then?”)* and if she or her partner used contraception (*“any kind of birth control, including condoms”)* in the month before her first pregnancy. A respondent was categorized as an ineffective contraceptor if she reported an unintended pregnancy (regardless of reported contraceptive use), and was categorized as an effective contraceptor if she reported an intended pregnancy and/or a history of sexual activity with no reported pregnancies. Though this definition conflates intentions and contraceptive behavior for some respondents, doing so allowed for the inclusion of respondents for whom contraception use was not directly measured. **Pre-18 male/female sexual partner count** reflected continuous counts of sexual partners, *“considering all types of sexual activity.”*[b]

Analyses

A series of step-wise logistic regression models were fit within STATA version 14.0,[23] with results adjusted to account for Add Health sampling weights and study design. Model 1 estimated the crude odds of teen pregnancy as predicted by sexual orientation; Model 2 added covariates mentioned above; Model 3 added sexual victimization history; and Model 4 incorporated sexual risk behaviors. For all models, 100% heterosexual served as the initial referent category, with additional post-estimation comparisons conducted to assess differences between sexual minority groups (i.e., between bisexual and lesbian women). Multinomial logistic regression models were fit, following the same step-wise approach listed above, to estimate the relative risk of an early or late-aged teen pregnancy (relative to no pregnancy).

RESULTS

Table 2 depicts the distributions of demographic and behavioral characteristics by sexual orientation. The majority of respondents (79%; n=4,739) identified as heterosexual, followed by mostly heterosexual (17.6%; n=1,013), bisexual (2.5%; n=145), and lesbian (1.2%; n=75). Almost 30% of the sample (n=1,766) reported a teen pregnancy; bisexuals reported the highest proportion of pregnancies (46.7%, n=58), and lesbians reported the lowest (17.8%, n=17). Among those who had a teen pregnancy, a higher proportion of both bisexuals and lesbians reported multiple pregnancies, with approximately 30% of bisexuals reporting 3 or more; bisexuals (58.0%, n=26) and lesbians (50.7%, n=11) were also more likely to report an early (vs. late) teen pregnancy relative to heterosexual respondents (45.6%; n=595), though neither association was significant.

[b]We were only able to include measures of partner counts up to age 18, owing to the structure of the Add Health data set. At Wave IV respondents were asked to retrospectively report the total number of male and female sexual partners across their lifetime, in the 12 months prior to the survey, and prior to age 18. As respondents did not report their age of first sexual encounter with each sexual partner, and no other waves assessed a complete inventory of sexual partners “considering all types of sexual activity” reported, we were unable to determine partner counts through the entire teen pregnancy risk period.

Results from logistic regression models for odds of teen pregnancy, and multinomial regression models for timing of teen pregnancy, are presented in Tables 3 and 4, respectively. In the unadjusted model (M1), bisexual women had over twice the odds of teen pregnancy compared to heterosexuals (odds ratio [OR]=2.20; 95% confidence interval [CI]=1.40, 3.45). Though attenuated, the association between bisexual (vs. heterosexual women) and teen pregnancy remained positive and significant after adjusting for covariates (M2; AOR=1.89; 95% CI=1.18, 3.03) and sexual victimization (M3; AOR=1.70; 95% CI=1.05, 2.75); however, this association was only marginally significant after controlling for proximal sexual risk behaviors (M4; AOR=1.62; 95% CI=0.98, 2.69; p=0.06). Similar patterns emerged for timing of teen pregnancy models: bisexual women were two times as likely to have an early teen pregnancy compared to heterosexual women (M3; relative risk ratio [RRR]=2.04; 95% CI=1.17, 0.56), however this association was attenuated and became marginally significant after controlling for sexual risk behaviors (M4; RRR=1.71; 95% CI= 0.91, 3.21; p=0.09)

In contrast, lesbians had significantly lower odds of teen pregnancy than all other groups. In the fully-adjusted model (M4), the odds of teen pregnancy among lesbians were 64% lower than those of heterosexual women (M4; OR=0.36; 95% CI=0.18, 0.74), 62% lower than those of mostly heterosexual women (OR=0.38; 95% CI=0.18, 0.80), and 73% lower than those of bisexual women (OR=0.27; 95% CI=0.11, 0.66).

DISCUSSION

Previous studies have found mixed associations between sexual orientation and teen pregnancy. In our nationally-representative sample, we found the highest prevalence of teen pregnancy among bisexuals and the lowest among lesbians, with heterosexual (28.4%) and mostly heterosexual (31.4%) females falling in-between. Bisexuals and lesbians were also more likely to have *multiple* teen pregnancies, though associations were non-significant. After adjusting for covariates and sexual victimization, bisexual women had significantly higher odds of teen pregnancy and were more likely to have an “early” teen pregnancy (likely occurring in high school) compared to their heterosexual peers. The proximal factors of sexual risk behaviors (AFVI, effective contraception use, and number of sexual partners) accounted for much of the association. In contrast, lesbians had significantly lower odds of teen pregnancy than all other orientation groups across adjusted models.

While our results replicate those of the Nurses’ Health Study, as well as the pooled and regional YRBS analyses, which found bisexual women (and SM women overall) were at higher risk for teen pregnancy than heterosexuals,[7,24] it remains unclear why our findings contradict results from the only other nationally-representative sample, the NSFG, which found no difference in pregnancy risk by sexual identity.[11] One potential reason for this inconsistency may be methodological limitations of the NSFG, including a smaller analysis sample (n=1,388; Table 1), as well as a limited orientation measure that only included the categories of heterosexual/lesbian/bisexual, may have contributed to the failure to detect a significant difference. As the present analysis included a substantially larger sample, as well as the identity category of ‘mostly heterosexual’ (which has previously been demonstrated to

capture substantively different individuals than either ‘heterosexual’ or ‘bisexual/lesbian’),[22,25] our findings address these NSFG limitations.

Although attenuated, associations for bisexual and lesbian identity (relative to heterosexuals and each other) retained significance after controlling for sexual victimization (M3). Sexual victimization has been proposed as an important determinant of orientation disparities in teen pregnancy risk, as prior studies have found that women who experience sexual victimization are more likely to experience a teen pregnancy,[26,27] and that SM women are significantly more likely to experience coerced and/or forced sexual encounters.[8,28,29] However, empirical support linking victimization, teen pregnancy, and sexual orientation has been mixed,[9,10] likely due to sparse and methodologically limited literature. As the first nationally-representative sample to control for sexual victimization, our results suggest that victimization is an important, though not exclusive, determinant of teen pregnancy risk in this population, and may function differently based on identity. For example, significantly higher proportions of both lesbian and bisexual (relative to heterosexual) women reported all three forms of sexual victimization (Table 2; $p<.001$), yet adjustment for victimization attenuated the odds of teen pregnancy for bisexuals relative to heterosexuals, but had no impact on the odds for lesbians relative to heterosexuals. It remains unclear why the effect of victimization differs across these groups, as, with the exception of physically forced encounters (reported by 24.8% bisexuals vs. 14% lesbians), both groups reported similar rates of CSA and coerced encounters. Additional research is needed, particularly research that explores whether pregnancy resulted from a coerced versus consensual encounter.

In addition to a higher risk for teen pregnancy and early teen pregnancy, sexual risk taking (as evidenced by earlier AFVI, more sexual partners, and less effective contraception use) was more likely among bisexual women compared to heterosexual women, replicating findings reported elsewhere,[11,30] and offering a potential proximal explanation for increased and earlier teen pregnancy odds in this group. However, more distal factors accounting for the riskier sexual behavior and higher odds of teen pregnancy among bisexual women remain unclear. One distal factor may be an unmet need for comprehensive sexual health information, as prior studies have found that SM women consistently report a lack of lesbian- and bisexual-specific ‘sexual scripts,’ primarily driven by either the absence of discussions on SM health, or discussions exclusively in the context of gay men and HIV.[31–34] This may also offer an explanation for why bisexual and lesbian women were more likely (albeit, not significantly) to have multiple teen pregnancies. Teen pregnancy prevention efforts—as well as teen parenting efforts that aim to prevent rapid repeat pregnancies—that begin at early ages before sexual initiation, and are inclusive of and/or tailored to the needs of SM young women, may therefore go a long way in addressing these disparities. For example, a study in Massachusetts found that SM high school students who received minimal or no ‘gay-sensitive’ instruction (as measured by self-reported comprehensiveness/inclusiveness of available materials by HIV educators) reported higher numbers of sexual partners, and were more likely to have had sex while intoxicated, compared to SM adolescents receiving highly-sensitive sex education.[35] Our findings of no difference in teen pregnancy odds for mostly heterosexual women, but *lower* risk for lesbians (relative to heterosexuals) suggest substantial variation in pregnancy risk between SM groups, potentially due to differences in sexual risk behavior. Lesbians in our sample

reported higher effective contraception rates than all groups, and fewer other-sex partners before age 18 than bisexuals, but more partners than heterosexuals (Table 1). Future prevention efforts should incorporate evidence on within-SM differences (in frequency, timing, and number of teen pregnancy) to best serve the diverse needs of SM populations.

Our results must be interpreted with some caveats. Our measure of sexual orientation was collected during young adulthood, and may not reflect one's identity during adolescence before or when the teen pregnancy occurred. As sexual identity was not assessed during adolescence, we used the most recent (Wave IV) report, which also was collected after the pregnancy for all respondents. The measure of identity also has limitations, as it conflates identity with attraction (e.g., defining bisexual identity as "equally attracted to men and women"), resulting in categories that may not have accurately captured respondents' experience and/or conceptualization of their own identity. In addition, the teen pregnancy prevalence estimates reported in this study are likely higher than prevalence estimates today given recent declines in the U.S. teen pregnancy rate and increased acceptance of sexual minority relationships since the time of Add Health data collection warranting the need for additional studies using more recent nationally-representative data.[13,36]

Despite these limitations, our study has several notable strengths. By utilizing a population-based sample that had fully aged out of the teen pregnancy 'risk period,' this study offers the most complete picture of sexual minority women's risk and timing of teen pregnancy to-date. In addition, our finding that bisexuals are more likely to experience an early teen pregnancy suggests that queer-inclusive teen pregnancy interventions may be most effective if implemented during, or before, high school. An additional strength is our incorporation of a more comprehensive group of prospectively-collected controls (reducing recall bias), particularly measures of adolescent socioeconomic status and sexual victimization. Finally, our study benefits from the use of a large sample, not recruited on the basis of sexual orientation, who reported all teen pregnancies up to age 20, affording sufficient power to conduct within-SM group comparisons—the importance of which is highlighted by the distinct patterns of association between bisexual and lesbian women that emerged. Further, we included 'mostly heterosexual' as a sexual identity distinct from both heterosexual and other minority groups, a distinction that has not been studied to-date for teen pregnancy. A recent systematic review from Savin-Williams and Vrangalova (2013) found that "mostly heterosexual" appears to function as a distinctly different identity than "100% heterosexual," with mostly heterosexual individuals reporting higher rates of same-sex attraction and partnering than exclusively heterosexuals (and lower rates than bisexuals), and equal or higher rates of other sex partnering than both groups.[22] Though we found that neither odds of teen pregnancy, nor timing of teen pregnancy, differed between mostly heterosexual and 100% heterosexual women, we found that mostly heterosexuals differed significantly (both in timing, and overall odds) from bisexuals in crude and demographic-adjusted models, and from lesbians in final adjusted models, furthering our understanding of sexual risk among this understudied group.

In conclusion, our work extends the existing literature by demonstrating opposing risk patterns for teen pregnancy between bisexual and lesbian women. These findings suggest that teen pregnancy prevention efforts should be developed to meet the unique needs of

sexual minorities, particularly targeted to those adolescents still in high school, as well as address within-sexual minority developmental and contextual differences.

Acknowledgments

The Add Health program project was funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. No direct support was received from grant P01-HD31921 for this analysis. Effort by Ms. Goldberg, Ms. Reese, and Dr. Halpern was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (grant R01HD57046, CT Halpern, Principal Investigator) and by the Carolina Population Center (grant 5 R24 HD050924, awarded to the Carolina Population Center at The University of North Carolina at Chapel Hill by the Eunice Kennedy Shriver National Institute of Child Health and Human Development). Efforts by Ms. Reese were further supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (grant 2T32HD007168-36, CT Halpern, Principal Investigator).

Abbreviations

SM	Sexual Minority
SES	Socioeconomic Status
CSA	Childhood Sexual Abuse
AFVI	Age of First Vaginal Intercourse

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Implications and Conclusions

Teen pregnancy risk may differ substantially between heterosexual and sexual minority (SM) women, as well as within SM groups. Risk appears to be highest among bisexual women, and lowest among lesbians, likely due to differences in sexual risk taking and sexual victimization. SM-inclusive teen pregnancy prevention efforts are needed.

Table 1

Proportion of female respondents experiencing a teen pregnancy, by sexual orientation, in existing studies

Study	Dataset	Location	Year	N	Heterosexual *(%)*	Mostly Heterosexual *(%)*	Bisexual *(%)*	Lesbian *(%)*
Tornello, Riskind, & Patterson, 2013	National Survey of Family Growth	US National (representative)	2006–2010	2,664 (1,388 included for pregnancy comparisons)	30.5	--	38.2	31.8
Charlton et al, 2013	Nurse's Health Survey II (NHSII) Growing Up Today Study (GUTS)	US National (non-representative)	NHSII: 1995	NHSII: 81,974	NHS: 9.9[b,c, ŦŦ]	--	NHS: 20.4[a, ŦŦ]	NHS: 7.2[a, ŦŦ]
		US National (non-representative)	GUTS: 2007	GUTS: 6,424	GUTS: 1.8[e, ŦŦ] Het-identified/ same-sex experienced (GUTS): 8.8[a, ŦŦ]	MH+B (GUTS): 3.9[a, ŦŦ]		GUTS: 2.7
Riskind et al, 2014	Youth Risk Behavior Survey	Pooled States	2005–2007	6,879 (weighted N)	14.0 [c]	--	19.0[a, ŦŦ]	27.0
Lindley & Walsemann, 2015	Youth Risk Behavior Survey	New York City	2005–2009	4,892	13.3 [e, ŧ]	**Unsure:** 12.2	B+L: 22.6 [a, ŧ]	
Goodenow, 2008	Youth Risk Behavior Survey	Massachusetts	1995–2001	3,963	10.8 [e, ŧŧ]	**Unsure:** 11.4	B+L: 24.1 [a, ŧŧ]	
Saewyc et al, 1999	Minnesota Adolescent Health Survey	Minnesota	1987	3,816	5.3 [e]	**Unsure:** 6.1[e]	B+L: 12.3 [a, d] B: 17.0 L: 53.0	

H= Heterosexual; MH= Mostly Heterosexual; B=Bisexual; L =Lesbian; '--' indicates category was not assessed

[a]Significantly different from heterosexuals

[b]Significantly different from lesbians

[c]Significantly different from bisexuals

[d]Significantly different from unsure

[e]Significantly different from sexual minority women (multiple non-heterosexual groups collapsed into single group)

[ɻ] Significant after adjusting for race, age, and survey year, and biological sex of prior sexual partners; NOT significant after adjusting for victimization history, age of first vaginal intercourse, and lifetime sexual partner count.

[ǂ] Significant after adjusting for race, age, survey year, immigrant status, sexual victimization, and receipt of school-based AIDS education.

[Ŧ] Significant after adjusting for age, race, and geographic region

Table 2

Demographic and Behavioral Characteristics of Female Respondents in the Analysis Sample (n=5,972), by Sexual Orientation Identity: The National Longitudinal Study of Adolescent to Adult Health, Wave IV (2008)

	100% Heterosexual	Mostly Heterosexual	Bisexual	Lesbian [a]	p-value [b]
	% (n)/Mean (SE)	*% (n)/Mean (SE)*	*% (n)/Mean (SE)*	*% (n)/Mean (SE)*	
TOTAL	78.7 (4,739)	17.6 (1,013)	2.53 (145)	1.2 (75)	--
Teen Pregnancy [c], *%*	28.4 (1,355)	31.4 (336)	46.6 (58)	17.8 (17)	.002
Early Pregnancy (age <18) [c]	45.6 (595)	42.9 (147)	58.0 (26)	50.7 (11)	0.456
Late Pregnancy (age 18–19) [c]	54.4 (760)	57.1 (189)	42.0 (32)	49.3 (6)	
Number of Teen Pregnancies (among those with a teen pregnancy) [c]					
1	51.7 (615)	50.8 (159)	42.1 (29)	48.8 (9)	
2	35.4 (556)	36.8 (132)	27.5 (18)	50.2 (8)	.133
3+	13.1 (184)	12.4 (45)	30.4 (11)	0 (0)	
Race/Ethnicity, *%*					
Non-Hispanic White	66.1 (2,478)	73.5 (618)	63.6 (74)	57.9 (29)	
Hispanic	10.9 (747)	9.9 (129)	12.5 (20)	14. (12)	<.001
Non-Hispanic Black	18.0 (1,175)	9.1 (170)	17.9 (40)	23.2 (26)	
Non-Hispanic Other	5.1 (339)	7.5 (96)	5.9 (11)	5.8 (8)	
Wave IV Age, Mean	28.7 (0.12)	28.4 (0.14)	28.3 (0.18)	28.5 (0.29)	.002
Adolescent Family Structure, *%*					
Two Bio-Parents	53.2 (2,386)	49.5 (467)	43.6 (60)	35.0 (25)	
Other Two Parents	17.2 (857)	21.5 (238)	21.5 (39)	19.2 (18)	.022
Single Parent	24.9 (1,241)	23.3 (252)	32.0 (41)	42.3 (30)	
Other	4.6 (255)	5.7 (56)	2.9 (5)	3.5 [d]	
Parental Educational Attainment, *%*					
Less than High School	12.0 (648)	8.9 (97)	18.5 (21)	13.1 (10)	
HS diploma/GED	31.5 (1,346)	25.3 (240)	38.9 (46)	30.1 (23)	.008
Some College	29.3 (1,396)	34.5 (333)	20.9 (31)	38.8 (25)	
Bachelor's or higher	27.2 (1,349)	31.3 (343)	21.7 (47)	18.0 (17)	
Adolescent Neighborhood Poverty, *%*					

	100% Heterosexual	Mostly Heterosexual	Bisexual	Lesbian [a]	p-value [b]
	% (n)/Mean (SE)	*% (n)/Mean (SE)*	*% (n)/Mean (SE)*	*% (n)/Mean (SE)*	
Low	49.8 (2,467)	59.2 (619)	45.6 (72)	48.5 (36)	
Medium	25.8 (1,134)	23.3 (223)	21.7 (39)	17.5 (13)	<.001
High	24.4 (1,138)	17.6 (171)	32.7 (34)	34.1 (26)	
Adolescent Neighborhood Urbanicity, *%*					
Rural	50.1 (2,213)	46.7 (460)	37.6 (58)	48.4 (30)	.075
Urban	49.9 (2,526)	53.3 (553)	62.4 (87)	51.6 (45)	
Adolescent Parental Relationship Quality, *Mean*	17.5 (0.07)	17.1 (0.14)	16.3 (0.35)	16.6 (0.32)	<.001
Childhood Sexual Abuse, *%*	5.5 (260)	10.8 (88)	12.5 (20)	9.6 (8)	<.001
Coerced Sexual Encounter [d]**,** *%*	15.2 (636)	25.3 (250)	33.7 (46)	34.3 (21)	<.001
Physically-Forced Sexual Encounter [d]**,** *%*	10.4 (456)	17.2 (171)	24.8 (37)	14.0 (14)	<.001
Age of First Vaginal Intercourse, *Mean*	15.9 (0.06)	15.4 (0.09)	14.9 (0.24)	15.1 (0.38)	<.001
Effective Contraception Use, *%*	70.3 (3,308)	64.1 (639)	54.3 (85)	80.9 (61)	<.001
Pre-18 Male Sexual Partner Count [e]*, Mean*	2.7 (0.10)	4.83 (0.34)	7.33 (1.44)	3.69 (0.78)	<.001
Pre-18 Female Sexual Partner Count [e]**,** *Mean*	0.02 (0.01)	0.21 (0.05)	1.19 (0.58)	1.03 (0.27)	<.001

Note: Percentages and means are weighted to reflect Add Health sample design (Ns are unweighted). Column percentages may not add to 100% owing to rounding and weighting.

[a] Sexual Orientation Identity based on self-report at Wave IV; “100% Homosexual” and “Mostly Homosexual” identity collapsed into single group, labeled “Lesbian”

[b] P-values indicate chi^2-test [categorical variables]/F-tests [continuous variables] of significant difference in predictor distribution across sexual orientation

[c] Teen pregnancy defined as pregnancy occurring prior to age 20, as retrospectively reported at the Wave IV interview. Number of teen pregnancies, and timing of teen pregnancy (Early [prior to age 18] and Late [age 18–19]) pregnancy percentages/counts reflect distributions among those who experienced a teen pregnancy (n=1,766).

[d] Coerced (e.g. non-physically) and physically-forced sexual encounters were limited to those that occurred prior to age 20

[e] Continuous number of sexual partners *“considering any kind of sex”* prior to age 18, as retrospectively reported at the Wave IV interview

[†] Indicates cell size too small to report, owing to Add Health reporting requirements

Table 3

Crude and Adjusted Odds Ratios (and 95% Confidence Intervals) of Teen Pregnancy Among Female Respondents (n= 5,972) in the National Longitudinal Study of Adolescent to Adult Health, Wave IV (2008)

	Model 1[a]	Model 2 [a]	Model 3 [a]	Model 4 [a]
	OR [95% CI]	*AOR [95% CI]*	*AOR [95% CI]*	*AOR [95% CI]*
Sexual Orientation [b]				
100% Heterosexual	1.00	1.00	1.00	1.00
Mostly Heterosexual	1.15 (0.93,1.43)	1.21+ (0.97,1.51)	1.14 (0.91,1.44)	1.01 (0.80,1.28)
Bisexual	2.20*** (1.40,3.45)	1.89** (1.18,3.03)	1.70* (1.05,2.75)	1.62+ (0.98,2.69)
Lesbian	0.54 (0.25,1.20)	0.41* (0.19,0.89)	0.41* (0.19,0.88)	0.47* (0.23,0.97)
Bisexual vs. Mostly Heterosexual (ref)	1.91** (1.20, 3.02)	1.56+ (0.97, 2.52)	1.49 (0.91, 2.43)	1.60+ (0.94, 2.74)
Lesbian vs. Mostly Heterosexual (ref)	0.47+ (0.21, 1.06)	0.34** (0.16, 0.74)	0.36** (0.16, 0.78)	0.46* (0.21, 0.99)
Lesbian vs. Bisexual (ref)	0.25** (0.10, 0.62)	0.22** (0.09, 0.54)	0.24** (0.10, 0.60)	0.29** (0.12, 0.71)
Race/Ethnicity				
Non-Hispanic White		1.00	1.00	1.00
Hispanic		1.56** (1.14,2.14)	1.61** (1.18,2.19)	1.68*** (1.25,2.27)
Non-Hispanic Black		1.61** (1.20,2.16)	1.69*** (1.26,2.28)	1.45** (1.10,1.91)
Non-Hispanic Other		1.18 (0.79,1.76)	1.18 (0.79,1.76)	1.32 (0.93,1.86)
Wave IV Age		0.93** (0.89,0.98)	0.93** (0.88,0.98)	0.94* (0.89,0.99)
Adolescent Family Structure				
Two Bio-Parents		1.00	1.00	1.00
Other Two Parents		1.65*** (1.37,2.00)	1.57*** (1.31,1.90)	1.34** (1.10,1.63)
Single Parent		1.47*** (1.21,1.78)	1.43*** (1.18,1.73)	1.29* (1.04,1.59)
Other		3.43*** (2.35,5.02)	3.17*** (2.18,4.61)	2.69*** (1.86,3.90)
Parental Educational Attainment				
Less than High School		2.52*** (1.89,3.35)	2.51*** (1.89,3.35)	2.30*** (1.70,3.11)
HS diploma/GED		2.12*** (1.65,2.72)	2.10*** (1.64,2.70)	1.91*** (1.47,2.49)
Some College		1.94*** (1.51,2.51)	1.93*** (1.49,2.49)	1.80*** (1.39,2.35)

	Model 1[a]	Model 2 [a]	Model 3 [a]	Model 4 [a]
	OR [95% CI]	*AOR [95% CI]*	*AOR [95% CI]*	*AOR [95% CI]*
Bachelor's or higher		1.00	1.00	1.00
Adolescent Neighborhood Poverty				
Low		1.00	1.00	1.00
Medium		1.17 (0.96,1.43)	1.16 (0.95,1.41)	1.22+ (1.00,1.50)
High		1.35 * (1.05,1.74)	1.33 * (1.04,1.71)	1.40 ** (1.10,1.78)
Adolescent Neighborhood Urbanicity				
Rural		1.00	1.00	1.00
Urban		1.14 (0.93,1.39)	1.14 (0.93,1.39)	1.07 (0.88,1.31)
Adolescent Parental Relationship Quality		0.94 *** (0.92,0.97)	0.95 *** (0.92,0.97)	0.97 * (0.94,0.99)
Childhood Sexual Abuse			1.28 (0.93,1.78)	1.12 (0.80,1.56)
Coerced Sexual Encounter [c]			1.23 (0.94,1.60)	1.10 (0.84,1.43)
Physically-Forced Sexual Encounter [c]			1.64 *** (1.23,2.17)	1.41 * (1.06,1.88)
Age of First Vaginal Intercourse				0.77 *** (0.72,0.83)
Effective Contraception Use				0.35 *** (0.28,0.42)
Pre-18 Male Sexual Partner Count				1.01 (0.99,1.02)
Pre-18 Female Sexual Partner Count				0.75 * (0.58,0.97)

OR= Odds Ratio; AOR= Adjusted Odds Ratio; CI= Confidence Interval

* $p<0.05$;

** $p<0.01$;

*** $p<0.001$

All results weighted to reflect Add Health sample design

[a] All models reflect odds of teen pregnancy (relative to none) associated with sexual orientation, controlling for all variables listed in the corresponding column. Teen pregnancy defined as pregnancy occurring prior to age 20, as retrospectively reported at the Wave IV interview

[b] Sexual Orientation Identity based on self-report at Wave IV; "100% Homosexual" and "Mostly Homosexual" identity collapsed into single group, labeled "Lesbian"

[c] Coerced (e.g. non-physically) and physically-forced sexual encounters were limited to those that occurred prior to age 20

Table 4

Crude and Adjusted Relative Risk Ratios (and 95% Confidence Intervals) of Timing of Teen Pregnancy Among Female Respondents (n=5,972) in the National Longitudinal Study of Adolescent to Adult Health, Wave IV (2008).

	MODEL 1[a]		MODEL 2[a]		MODEL 3[a]		MODEL 4[a]	
	Late (18–19)	Early (<18)	Late (18–19)	Early (<18)	Late (18–19)	Early (<18)	Late (18–19)	Early (<18)
	RRR [95% CI]	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*
Sexual Orientation [b]								
100% Heterosexual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Mostly Heterosexual	1.21 (0.94,1.56)	1.08 (0.78,1.50)	1.25+ (0.97,1.62)	1.16 (0.84,1.61)	1.20 (0.92,1.56)	1.08 (0.78,1.48)	1.14 (0.87,1.49)	0.87 (0.62,1.22)
Bisexual	1.70 (0.89,3.24)	2.79*** (1.59,4.90)	1.52 (0.78,2.95)	2.31** (1.33,4.04)	1.39 (0.70,2.75)	2.04* (1.17,3.56)	1.50 (0.77,2.91)	1.71+ (0.91,3.21)
Lesbian	0.49 (0.15,1.58)	0.60 (0.24,1.49)	0.39+ (0.13,1.20)	0.44+ (0.18,1.11)	0.38+ (0.12,1.18)	0.43+ (0.17,1.09)	0.53 (0.19,1.48)	0.39+ (0.14,1.11)
Bisexual vs. Mostly Heterosexual (ref.)	1.40 (0.72, 2.72)	2.58*** (1.47, 4.52)	1.21 (0.61, 2.40)	1.99* (1.14, 3.45)	1.16 (0.57, 2.35)	1.90* (1.08, 3.35)	1.32 (0.66, 2.63)	1.97* (1.00, 3.88)
Lesbian vs. Mostly Heterosexual (ref.)	0.41 (0.13, 1.31)	0.56 (0.21,1.45)	0.31* (0.10, 0.95)	0.38+ (0.15, 1.01)	0.32* (0.10, 0.98)	0.40+ (0.15, 1.07)	0.47 (0.17, 1.31)	0.45 (0.14, 1.41)
Lesbian vs. Bisexual (ref.)	0.29+ (0.08, 1.02)	0.22** (0.07, 0.65)	0.25* (0.07, 0.88)	0.19** (0.06, 0.59)	0.27* (0.08, 0.95)	0.21** (0.07, 0.65)	0.36+ (0.11, 1.12)	0.23* (0.06, 0.79)
Race/Ethnicity								
Non-Hispanic White			1.00	1.00	1.00	1.00	1.00	1.00
Hispanic			1.40+ (0.99,2.00)	1.75** (1.19,2.58)	1.45* (1.02,2.07)	1.79** (1.22,2.61)	1.50* (1.06,2.10)	1.94*** (1.33,2.84)
Non-Hispanic Black			1.57** (1.16,2.14)	1.67** (1.16,2.39)	1.64** (1.20,2.26)	1.77** (1.23,2.53)	1.41* (1.04,1.90)	1.49* (1.05,2.13)
Non-Hispanic Other			1.24 (0.84,1.81)	1.12 (0.62,2.00)	1.25 (0.85,1.83)	1.09 (0.60,1.98)	1.35+ (0.96,1.91)	1.29 (0.76,2.20)
Wave IV Age			0.95+ (0.90,1.00)	0.91** (0.85,0.97)	0.95+ (0.90,1.01)	0.91** (0.85,0.97)	0.95+ (0.90,1.01)	0.91* (0.85,0.98)
Adolescent Family Structure								
Two Bio-Parents			1.00	1.00	1.00	1.00	1.00	1.00
Other Two Parents			1.83*** (1.46,2.29)	1.46** (1.12,1.90)	1.75*** (1.39,2.19)	1.38* (1.06,1.79)	1.55*** (1.24,1.94)	1.10 (0.83,1.46)
Single Parent			1.55** (1.20,2.02)	1.38* (1.06,1.78)	1.51** (1.16,1.97)	1.33* (1.03,1.73)	1.42* (1.08,1.87)	1.14 (0.86,1.52)
Other			3.64*** (2.41,5.52)	3.19*** (1.90,5.34)	3.42*** (2.25,5.19)	2.88*** (1.75,4.74)	3.09*** (2.05,4.67)	2.28** (1.40,3.73)
Parental Educational Attainment								
Less than High School			2.16*** (1.48,3.16)	2.94*** (2.08,4.15)	2.14*** (1.47,3.11)	2.96*** (2.10,4.19)	2.04*** (1.40,2.97)	2.62*** (1.79,3.84)
HS diploma/GED			2.08*** (1.55,2.78)	2.18*** (1.59,2.98)	2.06*** (1.54,2.76)	2.16*** (1.58,2.96)	1.95*** (1.43,2.64)	1.88*** (1.36,2.61)

	MODEL 1[a]		MODEL 2[a]		MODEL 3[a]		MODEL 4[a]	
	Late (18–19)	Early (<18)	Late (18–19)	Early (<18)	Late (18–19)	Early (<18)	Late (18–19)	Early (<18)
	RRR [95% CI]	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*	*RRR [95% CI]*
Some College			1.94*** (1.45,2.60)	1.95*** (1.40,2.72)	1.92*** (1.44,2.57)	1.93*** (1.38,2.70)	1.84*** (1.37,2.46)	1.76** (1.23,2.51)
Bachelor's or higher			1.00	1.00	1.00	1.00	1.00	1.00
Adolescent Neighborhood Poverty								
Low			1.00	1.00	1.00	1.00	1.00	1.00
Medium			1.17 (0.92,1.49)	1.17 (0.89,1.55)	1.16 (0.91,1.47)	1.16 (0.87,1.53)	1.20 (0.94,1.53)	1.26 (0.94,1.68)
High			1.19 (0.91,1.55)	1.55** (1.12,2.17)	1.18 (0.91,1.54)	1.53* (1.11,2.12)	1.21 (0.95,1.54)	1.70** (1.21,2.39)
Adolescent Neighborhood Urbanicity								
Rural			1.00	1.00	1.00	1.00	1.00	1.00
Urban			1.08 (0.89,1.32)	1.21 (0.92,1.59)	1.08 (0.89,1.32)	1.21 (0.92,1.58)	1.04 (0.85,1.27)	1.10 (0.84,1.43)
Adolescent Parental Relationship Quality			0.96** (0.93,0.99)	0.92*** (0.89,0.96)	0.96* (0.93,0.99)	0.93*** (0.90,0.96)	0.98 (0.95,1.01)	0.95** (0.91,0.99)
Childhood Sexual Abuse					1.10 (0.75,1.60)	1.53* (1.04,2.26)	1.05 (0.74,1.51)	1.19 (0.76,1.87)
Coerced Sexual Encounter [c]					1.22 (0.88,1.70)	1.24 (0.85,1.80)	1.14 (0.83,1.57)	1.04 (0.70,1.54)
Physically-Forced Sexual Encounter [c]					1.65*** (1.24,2.20)	1.62* (1.04,2.54)	1.47** (1.10,1.97)	1.34 (0.84,2.13)
Age of First Vaginal Intercourse							0.86*** (0.80,0.92)	0.68*** (0.60,0.77)
Effective Contraception Use							0.33*** (0.26,0.41)	0.37*** (0.29,0.48)
Pre-18 Male Sexual Partner Count							1.00 (0.99,1.02)	1.01 (0.99,1.03)
Pre-18 Female Sexual Partner Count							0.65** (0.47,0.90)	0.83 (0.67,1.04)

RRR= Relative Risk Ratio; CI= Confidence Interval

*$p<0.05$;

**$p<0.01$;

***$p<0.001$

All results weighted to reflect Add Health sample design.

[a]All models reflect relative risk ratios (RRR) of early (prior to age 18) or late (age 18–19) teen pregnancy, relative to referent category of no teen pregnancy, associated with sexual orientation, controlling for all variables listed in the corresponding column.

[b]Sexual Orientation Identity based on self-report at Wave IV; "100% Homosexual" and "Mostly Homosexual" identity collapsed into single group, labeled "Lesbian"

[c]Coerced (e.g. non-physically) and physically-forced sexual encounters were limited to those that occurred prior to age 20