



ELSEVIER

JOURNAL OF  
ADOLESCENT  
HEALTH

www.jahonline.org

Original article

## Adolescent Sexual Activity, Contraceptive Use, and Pregnancy in Britain and the U.S.: A Multidecade Comparison

Rachel H. Scott, Ph.D.<sup>a,\*</sup>, Kaye Wellings, M.A., M.Sc.<sup>b</sup>, and Laura Lindberg, Ph.D.<sup>c</sup><sup>a</sup> Department of Population Health, London School of Hygiene & Tropical Medicine, London, UK<sup>b</sup> Department of Public Health, Environments and Society, London School of Hygiene & Tropical Medicine, London, UK<sup>c</sup> Guttmacher Institute, New York, New York

Article history: Received July 10, 2019; Accepted November 21, 2019

Keywords: Sexual behavior; Contraception; Adolescents; Cross-national

### ABSTRACT

**Purpose:** Pregnancy rates among adolescents have declined in the U.S. and Britain but remain high compared with other high-income countries. This comparison describes trends in pregnancy rates, recent sexual activity, and contraceptive use among women aged 16–19 years in the U.S. and Britain to consider the contribution of these two behavioral factors to the decline in pregnancy rates in the two countries and the differences between them.

**Methods:** We use data from two rounds of the U.S. National Survey of Family Growth, conducted 2002–2003 and 2011–2015, and the British National Survey of Sexual Attitudes and Lifestyles, conducted 2000–2001 and 2010–2012, to describe population-level differences between countries and over time in sexual activity and contraceptive use. We calculate pregnancy rates using national births and abortions data.

**Results:** Pregnancy rates declined in both countries; this began earlier in the U.S. and was steeper. There was no change in sexual activity in Britain, but in the U.S., the proportion reporting recent sex declined. In both countries, there was a shift toward more effective contraception. A higher proportion in Britain than the U.S. reported ever having had sex (65% vs. 49%) and sex in the last year (64% vs. 45%), 6 months (59% vs. 45%), and 4 weeks (48% vs. 45%). A higher proportion in Britain reported using more effective contraception (68% vs. 52%).

**Conclusions:** In both countries, improvements in contraceptive use have contributed substantially to declines in pregnancy rates; however, the steeper decline in the U.S. likely also reflects declines in recent sex occurring only in that country.

© 2019 Society for Adolescent Health and Medicine. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### IMPLICATIONS AND CONTRIBUTION

Contrasting patterns of sexual activity, contraceptive use and adolescent pregnancy in Britain and the U.S. highlight the key contribution of improvements in contraception to the declines in pregnancy rates in both countries and the persistent pattern of greater sexual activity but lower pregnancy rates in Britain than the U.S.

**Conflicts of interest:** The authors declare no conflicts of interest.

**Ethical approval:** Methods of data collection and dissemination of the NSFG public-use data set were reviewed by NCHS's Institutional Review Board. Natsal-2 was approved by the University College London and North Thames Multi-Centre Research Ethics Committees and all the Local Research Ethics Committees in Britain, and Natsal-3 was approved by the Oxford Research Ethics Committee.

\* Address correspondence to: Rachel H. Scott, Ph.D., Department of Population Health, London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E7HT, UK.

An earlier version of this article was presented at the 2018 Population Association of America Annual Meeting.

E-mail address: [rachel.scott@lshtm.ac.uk](mailto:rachel.scott@lshtm.ac.uk) (R.H. Scott).

Pregnancy rates among 15- to 19-year-olds have declined in recent decades in both the U.S. and Britain [1,2]. Adolescent pregnancy rates in Britain and the U.S., however, remain high compared with other high-income countries [3]. Research on the proximate determinants of fertility across developed countries, including the U.S. and Britain, has documented widespread shifts toward earlier initiation of sexual intercourse among adolescents since the 1950s [4]. More recent analyses suggest that age at first sex, which had been declining, may have reached a plateau in Britain [5], and some U.S. data documents recent increases in age at first sex [6]. At the same time, the use of more effective

methods of contraception among young people has increased in the U.S. [7]. Multiple studies have documented that changes in contraceptive use have made a larger contribution than changes in sexual activity to the declines in pregnancy rates to women aged 15–19 years for various periods from 1995 to 2015 [7–10]; this has not been examined directly for Britain.

This analysis aims to provide a better understanding of the proximate factors contributing to the differences in adolescent pregnancy rates between Britain and the U.S. and the recent decline in rates in both countries. Cross-national comparisons offer a useful tool for understanding and contextualizing health and behavioral outcomes across settings and informing policy. Researchers and policy makers have often looked toward differences between the U.S. and other European countries in adolescent sexual behaviors and outcomes to better understand disparities in pregnancy rates and consider alternative policy approaches [11–13]. Data from the 1980s and 1990s showed that European adolescents were significantly more likely than U.S. teens to use contraception and to use more effective contraceptive methods and concluded that higher adolescent pregnancy rates in the U.S. were largely because of these differences in contraceptive use and less to differences in sexual activity [14]. A cross-national study using data from 2001 to 2002 found lower contraceptive use among U.S. adolescents compared with many other European countries [15]. More recent comparisons between the U.S. and Britain are lacking.

The current analysis is timely in the context of potential rollbacks of formal sex education and contraceptive insurance coverage and access in the U.S. [16], in contrast to the introduction of mandatory relationships and sex education in schools in England in 2020 [17] (albeit alongside concern about cuts to sexual health services [18]).

This analysis compares population-level trends in sexual activity and contraceptive use among women aged 16–19 years in Britain and the U.S. to describe the proximate behavioral determinants of both the recent decline in adolescent pregnancy rates in the two countries and the differences in their pregnancy rates. We also use Santelli et al.'s pregnancy risk index (PRI) to quantify the relative contribution of changes in the proximal determinants of fertility [7–10]. We capitalize on the availability of relevant high-quality nationally representative survey data at two points in time from both countries, the British National Surveys of Sexual Attitudes and Lifestyles (Natsal) and the U.S. National Survey of Family Growth (NSFG). These surveys have the benefit of being conducted at multiple and similar points in time and covering similar topics, facilitating comparability between the countries.

## Methods

### Data

We use data from two rounds of the U.S. NSFG, conducted in 2002 and 2011–2015, and two rounds of the British Natsal studies—Natsal-2, conducted in 2000–2001, and Natsal-3, conducted in 2010–2012. Both surveys used a multistage, clustered, and stratified probability sampling strategy. The NSFG surveys the noninstitutionalized population of men and women aged 15–44 years in the U.S. Natsal surveys the noninstitutionalized population of men and women (aged 16–44 years in Natsal-2 and 16–74 years in Natsal-3) in Britain. Both surveys use face-to-face interviews, with some sensitive questions answered in

audio computer-assisted self-interview. The NSFG response rate was 80% in 2002 and about 71% in 2011–2015. The overall response rates were 63.9% and 57.7% in Natsal-2 and Natsal-3, respectively. Methodology details are published elsewhere [19,20].

All analyses of survey data were limited to women aged 16–19 years at the time of the surveys. Although 15-year-olds were included in the NSFG, the Natsal surveys only include respondents aged 16 years and older. In total, there were 933 women aged 16–19 years in the NSFG in 2002, and 1,681 in 2011–2015. In the Natsal surveys, the sample sizes were 615 in 2000 and 981 in 2010. There was no evidence of any change over time or differences between the two countries in age composition of the sample.

We calculated yearly pregnancy rates (births, abortions, and estimates of miscarriages) from 1998 to 2013 among women aged 16–19 years in both countries. In the U.S., the number of births was obtained from vital statistics, whereas abortions were derived from the Guttmacher Institute's periodic national census of abortion providers. Full details of these data and methodology are published elsewhere [1]. Data on births, abortions, and mid-year populations were obtained from the Office for National Statistics and the Department of Health in England and Wales<sup>a</sup>. For both countries, pregnancy rates refer to age when the pregnancy ended. Miscarriages are not measured directly in either country; we estimate fetal losses as being equal to 20% of births plus 10% of abortions, as done in previous studies [1,3].

### Variables

We use multiple measures of sexual activity: vaginal intercourse ever, in the last 12 months, in the last 6 months, and in the last 4 weeks, and four or more times in the last 4 weeks. In the NSFG, women are asked “*At any time in your life, have you ever had sexual intercourse with a man, that is, made love, had sex, or gone all the way?*”<sup>b</sup>; recent sexual activity is asked in follow-up questions collected as part of a sexual and contraceptive use calendar. In Natsal, women were asked: “*How old were you when you first had sexual intercourse with someone of the opposite sex, or has not this happened?*” Recent sexual activity is asked in follow-up questions referring to specific periods. We created comparable measures to examine recent sexual activity across both data sources (in the last 12 months, 6 months and 4 weeks, and four or more times in the last 4 weeks). We focus on penile-vaginal sex, as it is a unique proximate determinant of pregnancy; however, we recognize that adolescents' sexual practices are diverse and not limited to heterosexual partners [21,22].

For each country, we created a measure of usual contraceptive method among those who reported vaginal sex at least once in the prior 6 months. Data for this measure were collected

<sup>a</sup> The data required to calculate pregnancy rates among 16- to 19-year-olds are not publicly available in Scotland, so the rates are those of England and Wales only, not Britain. As National Records of Scotland data show that pregnancy rates among 15- to 19-year-olds in Scotland are similar to those in England and Wales, it is reasonable to compare the British survey data to the pregnancy rates for England and Wales. Throughout the article, we refer to England and Wales when discussing pregnancy rates and Britain when discussing sexual activity and contraceptive rates.

<sup>b</sup> Women were explicitly told by the interviewer not to count oral sex, anal sex, heavy petting, or other forms of sexual activity that do not involve vaginal penetration or sex with a female partner.

differently in the two countries. In Britain, women were asked which contraceptive methods they had used in the last year, and, of these, which was their usual method. We coded these variables using a hierarchy of effectiveness, such that where a respondent provided multiple responses to this question, the most effective method was recorded (e.g., if a woman reported pill and condom use, this was coded as pill), applying an effectiveness typology from the NSFG based on typical-use contraceptive failure rates<sup>c</sup>. To create a comparable U.S. measure of usual contraceptive use, we used monthly reports of contraceptive use among women reporting vaginal sex in the last 6 months<sup>d</sup> to identify the method of contraception used most often used during this period. In cases in which two or more methods were reported an equal number of months, we identified the more effective method of contraception using the NSFG failure rate typology. Those who did not report any contraceptive use during the 6-month interval were identified as nonusers. This differs from the conventional measure of usual contraceptive use available in the NSFG recode file provided by NCHS, which measures only method use in the month of the interview; we use this broader measure of use in the last 6 months for comparability to the measure available in Natsal. For analysis, we classed intrauterine device (IUD)/intrauterine system (IUS) and implant, injectables, pills, patch, and ring as “more effective” methods, based on their typical use failure rates. This grouping is based on failure rates but also shows a distinction between methods that require interaction with the health system and those that do not, which may be important in understanding differences between the two countries.

### Analysis

First, we plotted trends in pregnancy rates in England and Wales and the U.S. Next, we calculated the crude survey-weighted proportions reporting each indicator of sexual activity and contraceptive use, using chi-squared tests to assess the evidence for changes over time within each survey. We pooled the NSFG and Natsal data to test for differences between surveys in each measure at a comparable time point.

We then adapt the methodology for calculating the PRI developed by Santelli et al. [8] to compare the change in the risk of becoming pregnant among women aged 16–19 years based on recent sexual activity (penile-vaginal intercourse in the last 6 months), contraceptive use or nonuse, and method-specific contraceptive failure rates. We calculate this overall and for sexually active women only to isolate overall changes in contraceptive risk. We used statistical decomposition, a method used to breakdown change over time in an outcome into its constituent parts, to attribute change in the PRI to changes in sexual activity or contraceptive method use [23]. Complete methodological details of the PRI can be found in earlier publications [7–10].

All analyses used sampling weights provided for each survey with the `svy` command prefix in Stata 14.1 (StataCorp, College Station, TX) to adjust for the complex survey designs [24].

<sup>c</sup> Unlike the U.S., Britain does not have a country-specific source of typical-use contraceptive failure rates. The U.S. rates are widely used in research and clinical practice outside of the U.S.

<sup>d</sup> Using data on all person-months, regardless of sexual activity during that month, to ensure consistency with Britain.

## Results

### Pregnancy rates

Both England and Wales and the U.S. have seen rapid declines in pregnancy rates among women aged 16–19 years since 2001 (Figure 1). The decline in the U.S. began earlier and has been of greater magnitude, declining 45% from 2001 to 2013, 11% from 2001 to 2007, and 38% from 2007 to 2013. In contrast, rates were fairly stable in England and Wales from 2001 to 2007 and then declined 34% from 2007 to 2013. In 2001, the pregnancy rate among 16- to 19-year-old women was substantially higher in the U.S. than in England and Wales (94 and 70 pregnancies per 1,000 16 to 19-year-old women in 2013 respectively). By 2013, although rates remain higher in the U.S. than Britain, because of these differential changes, the gap between the two countries narrowed (52 and 46 pregnancies per 1,000 16- to 19-year-old women in 2013 in the U.S. and England and Wales, respectively).

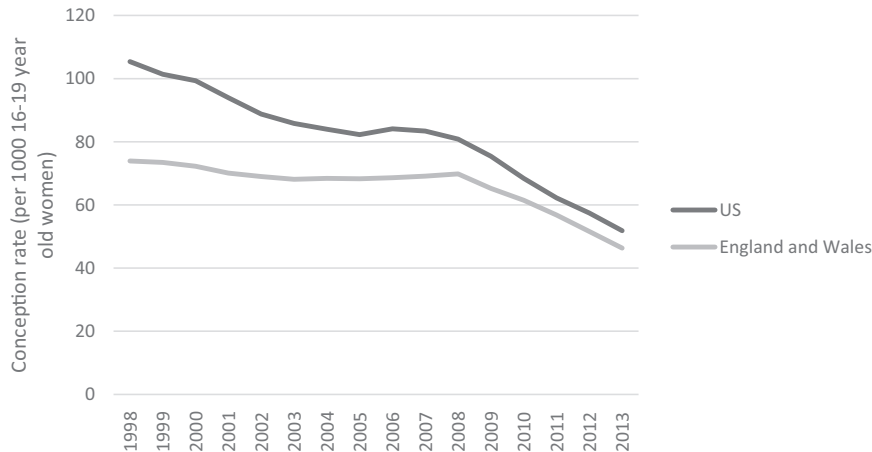
### Sexual activity

Among all 16- to 19-year-old women in Britain, there was no change in reporting of ever having had sex or sexual activity in the last 12 months, 6 months, or 4 weeks among women aged 16–19 years from 2000 to 2010 (Table 1). In the U.S., there was no significant change between 2002 and 2013 in the proportion reporting ever having had sex or sex in the last 12 months. However, the proportion reporting sex in the last 6 months declined from 47% to 39% ( $p = .01$ ) over the same period, and the proportion reporting sex in the last 4 weeks declined from 34% to 29% ( $p = .05$ ). Additional analyses in the U.S. (results in Supplementary Table 1) showed that all the declines in the proportion of women reporting recent sex occurred from 2002 to 2006–2008; there was no significant change in any of the sexual activity measures from 2007 to 2013. This analysis was not possible for Britain, as there were no interim surveys.

Among 16- to 19-year-old women who had ever had sex, the proportion reporting sex in the last 6 months declined from 88% in 2002 to 80% in 2013 ( $p < .001$ ) in the U.S. but remained stable in Britain (Table 2). There was no evidence of a change in the proportion reporting sex in the last 4 weeks or sex more than four times in the last 4 weeks in either country among those who had ever had sex.

In both years under study, women aged 16–19 years in the U.S. were less likely to have ever had sex and less likely to report recent sexual activity, compared with their British counterparts (Table 1). In 2010, 65% of 16- to 19-year-old women in Britain reported ever having had sex, 64% reported sex in the last 12 months, 59% sex in the last 6 months, and 48% sex in the last 4 weeks, compared with 49%, 45%, 39%, and 29%, respectively, in 2013 in the U.S. ( $p < .001$  for all measures).

Even among those who had ever had sex, young women in the U.S. in 2013 were less likely to have had sex in a recent period than women in Britain. In Britain in 2010, 89% of 16- to 19-year-olds who had ever had sex reported sex in the last 6 months, compared with 80% in the U.S. in 2013 ( $p < .001$ ; Table 2). The differences between the two countries were greater when considering more recent sex; in Britain in 2010, 74% of those who reported ever having had sex also reported sex in the last 4 weeks, compared with 59% in the U.S. in 2013 ( $p < .001$ ). Similarly, in the later periods, a greater proportion of 16- to 19-year-old women in Britain who had ever had sex reported having sex



**Figure 1.** Trends in pregnancy rates among 16- to 19-year-olds in England and Wales and the U.S., 1998–2013. Data sources: England and Wales: Office for National Statistics, Department of Health; the U.S.: Guttmacher Institute.

four times or more in the last 4 weeks (50%) compared with women in the U.S. (32%;  $p < .001$ ).

#### Contraceptive use

The patterns of changes in usual contraceptive use over time differed between the two countries. There was no change in Britain in the proportion reporting nonuse of contraception between 2000 and 2010 (Table 3). In the U.S., the proportion usually using no method declined from 8% to 4% between 2002 and 2013 ( $p = .02$ ). Neither country saw an increase in the proportion usually using more effective methods of contraception overall (IUS/IUD, implant, injectable, pill, patch, and ring together), but the use of the IUD and implant increased in both, from 1% to 13% in Britain ( $p < .001$ ) and from 1% to 5% in the U.S. ( $p = .02$ ). In Britain, the use of the pill, patch, and ring declined between 2000 and 2010 from 58% to 49% ( $p < .001$ ). There were no changes in either country in condom or withdrawal use in either country.

At both time points, reported use of more effective contraceptive methods among those reporting sex in the last 6 months was higher in Britain than in the U.S. In 2010, a greater proportion of women aged 16–19 years in Britain than in the U.S. in 2013 used a more effective method as their usual method of contraception (68% in Britain vs. 52% in the U.S.;  $p < .001$ ). In 2010, a greater proportion in Britain reported using the pill, patch, or ring (49% in Britain vs. 38% in the U.S.;  $p = .003$ ) and the IUS/IUD or implant (13% in Britain vs. 5% in the U.S.;  $p = .001$ ); a greater proportion in the U.S. usually used the injectable (5% in

Britain vs. 10% in the U.S.;  $p = .018$ ). In the later period, although a similar proportion in both countries reported not usually using a method of contraception, a higher proportion in the U.S. usually used condoms (36% in 2013 vs. 27% in Britain in 2010;  $p = .020$ ), and a markedly higher proportion usually used withdrawal; 8% in the U.S. compared with less than 1% in Britain ( $p < .001$ ).

#### Pregnancy risk index

Overall, the proportional decline in the PRI was substantially larger in the U.S. (–33%) than in Britain (–20%), paralleling the steeper U.S. decline in the adolescent pregnancy rate documented in Figure 1. When limited to sexually active young women, the decline in the PRI was modestly larger in the U.S. than in Britain (–19% vs. –16%), indicating slightly greater improvements in contraceptive use in the U.S.

Decomposition of the overall change in the PRI revealed different influences of the two proximate determinants in each country. In Britain, where the proportion sexually active had a small and not statistically significant decline, we calculate that 19% of the overall change in the PRI from 2000 to 2010 was because of declines in sexual activity, and 81% was because of improvements in contraceptive use. In contrast, in the U.S. from 2002 to 2011–2015, 47% of the change in the PRI was because of declines in sexual activity, and 53% was because of improvements in contraceptive use; all the changes in sexual activity were concentrated from 2002 to 2006–2008. From 2006–2008 to 2011–2015 in the U.S., there was a 23% decline in the PRI;

**Table 1**

Sexual activity among all women aged 16–19 years, by survey and year, the U.S. (NSFG 2002, 2011–2015) and Britain (Natsal 2000, 2010)

	The U.S. (NSFG)			Britain (Natsal)			Britain versus the U.S.	
	2002 (N = 933)	2013 (N = 1,681)	2002 versus 2013	2000 (N = 613)	2010 (N = 969)	2000 versus 2010	2000/2002	2010/2013
	% (95% CI)	% (95% CI)	<i>p</i> value	% (95% CI)	% (95% CI)	<i>p</i> value	<i>p</i> value	<i>p</i> value
Ever had vaginal sex	54 (50–58)	49 (45–54)	.10	68 (64–72)	65 (61–68)	.26	<.01	<.01
Sexually active in the last 12 months	49 (45–54)	45 (41–49)	.16	65 (61–70)	64 (60–67)	.52	<.01	<.01
Sexually active in the past 6 months	47 (43–51)	39 (35–43)	<.01	61 (56–65)	59 (55–62)	.46	<.01	<.01
Sexually active in the last 4 weeks	34 (30–39)	29 (25–33)	.11	50 (45–54)	48 (45–52)	.68	<.01	<.01

CI = confidence interval; Natsal = National Surveys of Sexual Attitudes and Lifestyles; NSFG = National Survey of Family Growth.

**Table 2**

Sexual activity among women aged 16–19 years who have ever had sex, by survey and year, the U.S. (NSFG 2002, 2011–2015) and Britain (Natsal 2000, 2010)

	The U.S. (NSFG)			Britain (Natsal)			Britain versus the U.S.	
	2002 (N = 517)	2013 (N = 845)	2002 versus 2013	2000 (N = 404)	2010 (N = 641)	2000 versus 2010	2000/ 2002	2010/ 2013
	% (95% CI)	% (95% CI)	p value	% (95% CI)	% (95% CI)	p value	p value	p value
Sexually active in the past 6 months	88 (85–91)	80 (76–83)	<.01	90 (86–93)	89 (86–91)	.719	.45	<.01
Sexually active in the last 4 weeks	64 (57–70)	59 (54–63)	.20	73 (68–78)	74 (70–78)	.772	.02	<.01
Sex ≥4 times in the last 4 weeks	39 (33–45)	32 (28–37)	.08	54 (48–60)	50 (45–54)	.212	<.01	<.01

CI = confidence interval; Natsal = National Surveys of Sexual Attitudes and Lifestyles; NSFG = National Survey of Family Growth.

decomposition of the change in the PRI between periods attributes 100% of the declines to improvements in contraceptive use (evidenced by the stability in the proportion sexually active between these periods shown in [Supplementary Table 1](#)).

## Discussion

Cross-national comparisons tracking the key proximate determinants of adolescent fertility offer important insights into recent patterns of change and differentials in adolescent pregnancy in Britain and the U.S. First, although both countries have experienced relatively large declines in pregnancy rates among women aged 16–19 years, rates are lower in Britain compared with the U.S. at both time points studied. Second, these declines across countries occurred despite a higher proportion of young women reporting ever having had sex and recent sexual activity in Britain than the U.S. The use of more effective methods of contraception, and particularly long-acting methods such as the implant, is more common in Britain than the U.S.; in the U.S. there is greater reliance on withdrawal and condoms. Third, over time in both countries, the proportion reporting ever having had sex was unchanged, whereas there were shifts toward more effective use of contraception. Nonuse of contraception in the U.S. declined, and the use of the implant and IUD/IUS, methods with very low failure rates, increased in both countries (in

Britain, this may have replaced some pill use). Fourth, declines in recent sexual activity, which occurred only in the U.S., may have contributed to the more rapid declines in adolescent pregnancy in the U.S., helping to narrow the gap between pregnancy rates in the two countries over time. However, since 2007, declines in nonuse of contraception as well as shifts to more effective methods among users appear to have been the primary contributor to the most recent declines in pregnancy rates in the U.S.; there was no decline in sexual activity after 2007. This supports findings of other research focused on trends from 2007 to 2014 among 15- to 19-year-olds in the U.S. [7,9].

In the U.S., there was an increase in new users of contraception between 2002 and 2013. Given the heightened risk of pregnancy from no method use, an increase in any method used would have a larger impact on pregnancy rates than the shift from a less effective to a more effective method [25]. Greater use of more effective methods in Britain may reflect their easier accessibility in a context where all contraception is provided free of charge and access to confidential reproductive health care is more widespread. In contrast, in the U.S., young people may rely on parents' health insurance or not have insurance at all, and concerns about confidentiality remain a barrier to contraceptive services [26]. Young women in the U.S. were more likely than their peers in Britain to rely on condoms and withdrawal, methods that do not require interaction with the health system.

**Table 3**

Contraceptive use (most effective usual method) among women aged 16–19 years who engaged in sexual intercourse in the last 6 months by survey and year, the U.S. (NSFG 2002, 2011–2015) and Britain (Natsal 2000, 2010)

	The U.S. (NSFG)			Britain (Natsal)			Britain versus the U.S.	
	2002 (N = 424)	2013 (N = 622)	2002 versus 2013	2000 (N = 325)	2010 (N = 568)	2000 versus 2010	2000/2002	2010/2013
	% (95% CI)	% (95% CI)	p value	% (95% CI)	% (95% CI)	p value	p value	p value
Contraceptive use								
No method	8 (5–12)	4 (2–6)	.02	5 (3–8)	4 (3–6)	.71	.12	.61
More effective methods <sup>a</sup>	49 (42–55)	52 (46–58)	.41	64 (58–70)	68 (63–72)	.36	<.01	<.01
IUD/IUS and implant	.2 (0–2)	5 (3–8)	<.01	1 (0–2)	13 (10–16)	<.001	.31	.00
Injectable	12 (9–16)	10 (7–13)	.40	5 (3–9)	5 (4–8)	.92	.01	.02
Pill, ring, and patch	36 (31–43)	38 (32–44)	.77	58 (52–64)	49 (44–54)	.02	<.01	.00
Condom	36 (31–42)	35 (30–42)	.81	30 (25–36)	27 (23–32)	.42	.14	.03
Withdrawal	6 (4–10)	8 (5–12)	.40	<1 (0–2)	<1 (0–1)	.87	<.01	<.01
Other methods <sup>b,c</sup>	.5 (0–2)	.5 (0–1)	1.00	<1 (–)	<1 (0–2)	.25	.99	.81

Denominator for CP use = nonpregnant women aged 16–19 years who have had sex in the last 6 months.

Usual method for NSFG = method used most frequently in the past year. If multiple methods used equally frequently, we present data for the most effective method. If no method used most frequently, usual method out of methods used.

No method for NSFG reflects respondents who did not use any methods in the past 6 months.

CI = confidence interval; IUD/IUS = intrauterine device/intrauterine system; Natsal = National Surveys of Sexual Attitudes and Lifestyles; NSFG = National Survey of Family Growth.

<sup>a</sup> Includes IUD, implant, injectable, pill, ring, and patch.<sup>b</sup> FOR NATSAL: includes emergency contraception, jelly or cream alone, male and female sterilization, rhythm/mucus methods, diaphragm, and other methods.<sup>c</sup> FOR NSFG: includes emergency contraception, jelly or cream alone, cervical cap, male and female sterilization, rhythm/mucus methods, diaphragm, female condom, vaginal insert, and other methods.

Differences in adolescents' access to contraception between Britain and the U.S. also likely reflect differences in sociocultural approaches to adolescent sexual and reproductive health more generally. The guiding paradigms shaping U.S. policy on young people's sexuality in the past decades conceptualize young people's sexuality as risky or dangerous, which informs an emphasis on "abstinence only until marriage" or "risk avoidance" [27]. In Britain, the same explicit focus on abstinence is not seen, and policies instead seek to enable young people to have sex when they are ready and to improve their knowledge and access to sexual and reproductive health services [28].

In recent years, Britain and the U.S. have also had different policies with regard to adolescent pregnancy prevention, with different emphases and funding levels. A recent comprehensive analysis of survey and routine data suggests that, in tandem with secular changes including expansion in participation in education and new guidelines encouraging use of long-acting reversible contraceptive (LARC) methods among young people in the mid-2000s, the government's Teenage Pregnancy Strategy, which ran from 1999 to 2010, contributed to the decline in under-18 conception rates in England [29,30]. In the U.S., during this period, there were similar guidelines encouraging the use of LARC methods, as well as a new emphasis on contraceptive counseling [31,32], but federal investments in evidence-based programs to prevent adolescent pregnancy were relatively modest [33].

The patterns of sexual activity among adolescents in the U.S. differed in important ways from their peers in Britain. Compared with Britain, young women in the U.S. are less likely to have ever had sex, less likely to have had recent sex, and report less frequent sex. This may reflect different patterns of relationships among young people between the two countries, which may have implications for frequency of sex and for contraceptive choices and patterns of use, such as the higher use of long-acting methods in Britain compared with the U.S. Similarly, the decline in reporting of recent sex in the U.S. may also reflect changing patterns of relationships. Although declines in frequency of sexual intercourse among adult women in the U.S. have been ascribed to increases in the share of unpartnered individuals [34], further research is needed to understand changes in recent sexual activity among adolescents in the U.S. It is important to note that over the period studied, there have been increases in the proportion of young women identifying as nonheterosexual. However, recent research has found that almost all young women who report same sex partners also report a male partner at some point in time, and that they have a higher likelihood of pregnancy, making inclusion of their opposite sex behaviors important [22].

Sexual activity and contraceptive use do not occur in a vacuum but are the results of myriad distal factors at individual, family, community, and country levels, including education, religion, deprivation, inequality, and race/ethnicity. Social disadvantage is an important influence on adolescent pregnancy rates in the U.S. [35] and Britain [36,37], and continued efforts to understand disparities and focus on health equities in each setting are needed. Part of this is recognizing and respecting the complexity of individuals' pregnancy desires and approaches to planning, and that there is variation in the extent to which pregnancy and childbearing are desired and normatively valued within different communities [38,39].

This analysis benefits from four nationally representative probability surveys, conducted at similar points in time for each

country, with detailed and broadly comparable indicators of sexual activity and contraceptive use. A key limitation is the difference in measurement of contraceptive use between Natsal and the NSFG; the monthly contraceptive calendar from the NSFG likely collects more reliable reports than the summary measure of usual use in Natsal, which may underestimate nonuse of contraception and of less effective methods such as withdrawal. If so, this would lead to an overestimate of the difference between the two countries in nonuse and use of less effective methods, so these findings should be interpreted with caution; however, the difference in data collection is less likely to influence reporting of more effective methods, particularly those that are not user dependent, such as the IUD/IUS, and implant. Calculation of the PRI relied on contraceptive failure rates from the U.S. and may not accurately measure the experiences of young women in Britain; more work is needed to identify structural- and individual-level factors that may result in variation in contraceptive effectiveness across settings. Data from both Natsal and NSFG may have some level of reporting bias, and if this bias occurs differentially in the two countries, some of the behavioral differences we report may be a result of reporting rather than true differences between the countries.

## Conclusion

Contrasting the U.S. with Britain demonstrates that more sex among young people does not have to mean more pregnancies. Despite consistently higher levels of sexual activity in Britain, pregnancy rates remain lower than those in the U.S., in neither country was there evidence that the decline in pregnancy rates was attributable to any decrease in the share of young women who have ever had sex, but declines in recent sexual activity in the U.S. likely contributed to the long-term decline in pregnancy rates. Improved contraceptive use appears to be a greater contributor than changes in sexual activity to the decline in pregnancy rates among women aged 16–19 years in both countries. These findings support a large body of research in highlighting the important contribution of contraception to declines in adolescent fertility in the U.S. and now in Britain.

## Acknowledgments

The authors gratefully acknowledge data analysis contributions of Grant Kopplin and Isaac Maddow Zimet and helpful feedback from Rachel Jones and John Santelli.

Natsal-3 is a collaboration between University College London (London, UK), the London School of Hygiene and Tropical Medicine (London, UK), NatCen Social Research, Public Health England (formerly the Health Protection Agency), and the University of Manchester (Manchester, UK).

## Funding Sources

The study was supported by grants from the Medical Research Council (G0701757) and the Wellcome Trust (084840), with contributions from the Economic and Social Research Council and Department of Health. Additional funding was provided by The JPB Foundation.

## Supplementary Data

Supplementary data related to this article can be found at <http://doi.org/10.1016/j.jadohealth.2019.11.310>.

## References

- [1] Kost K, Maddow-Zimet I, Arapia. Pregnancies, A. births and abortions among adolescents and young women in the United States, 2013: National and state trends by age, race and ethnicity. New York: Guttmacher Institute; 2017.
- [2] Office for National Statistics. Conceptions in England and Wales: 2016. London: Office for National Statistics; 2018.
- [3] Sedgh G, Finer LB, Bankole A, et al. Adolescent pregnancy, birth, and abortion rates across countries: Levels and recent trends. *J Adolesc Health* 2015;56:223–30.
- [4] Teitler JO. Trends in youth sexual initiation and fertility in developed countries: 1960–1995. *Ann Am Acad Polit Soc Sci* 2002;580:134–52.
- [5] Mercer CH, Tanton C, Prah P, et al. Changes in sexual attitudes and lifestyles in Britain through the life course and over time: Findings from the National Surveys of Sexual Attitudes and Lifestyles (Natsal). *Lancet* 2013;382:1781–94.
- [6] Bridges T, Philbin JM. Gender convergence over “cheap sex”. *Contexts* 2019;18:72–5.
- [7] Lindberg L, Santelli J, Desai S. Changing patterns of contraceptive use and the decline in rates of pregnancy and birth among U.S. adolescents, 2007–2014. *J Adolesc Health* 2018;63:253–6.
- [8] Santelli J, Abma J, Ventura S, et al. Can changes in sexual behaviors among high school students explain the decline in teen pregnancy rates in the 1990s? *J Adolesc Health* 2004;35:80–90.
- [9] Lindberg L, Santelli J, Desai S. Understanding the decline in adolescent fertility in the United States, 2007–2012. *J Adolesc Health* 2016;59:577–83.
- [10] Santelli JS, Lindberg LD, Finer LB, Singh S. Explaining recent declines in adolescent pregnancy in the United States: The contribution of abstinence and improved contraceptive use. *Am J Public Health* 2007;97:150–6.
- [11] Jones EF, Forrest JD, Goldman N, et al. Teenage pregnancy in industrialized countries. New Haven (CT) and London: Yale University Press; 1986.
- [12] Schalet AT. Not under my roof: Parents, teens, and the culture of sex. Chicago: University of Chicago Press; 2011.
- [13] Blum R, Gates WH. A global look at adolescent pregnancy prevention: Strategies for success. Presented at the: Office of adolescent health web-cast; May 2, 2013. Available at: [https://www.hhs.gov/ash/oah/sites/default/files/ash/oah/news/assets/May%202013%20TPP%20Event/blum\\_ppt\\_presentation.pdf](https://www.hhs.gov/ash/oah/sites/default/files/ash/oah/news/assets/May%202013%20TPP%20Event/blum_ppt_presentation.pdf). Accessed October 1, 2019.
- [14] Jones EF, Forrest JD, Goldman N, et al. Teenage pregnancy in developed countries: Determinants and policy implications. *Fam Plann Perspect* 1985;17:53–63.
- [15] Santelli J, Sandfort T, Orr M. Transnational comparisons of adolescent contraceptive use: What can we learn from these comparisons? *JAMA Pediatr* 2008;162:92–4.
- [16] Hasstedt K, Boonstra H. Taking stock of year one of the Trump administration's harmful agenda against reproductive health and rights. New York (NY): Guttmacher Institute; 2018.
- [17] Parliament: House of Commons. Relationships and Sex Education in Schools (England). London: The Stationery Office; 2019. Briefing paper 06103, 17 December 2019.
- [18] White C. Sexual health services: Divided and unprotected. *BMJ* 2016;532:i309.
- [19] National Center for Health Statistics. Public use data file documentation: 2013–2015 National Survey of Family Growth. Hyattsville, MD: National Center for Health Statistics; 2017.
- [20] Erens B, Phelps A, Clifton S, et al. Methodology of the third British National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Sex Transm Infect* 2014;90:84–9.
- [21] Lewis R, Tanton C, Mercer CH, et al. Heterosexual practices among young people in Britain: Evidence from three National Surveys of Sexual Attitudes and Lifestyles. *J Adolesc Health* 2017;61:694–702.
- [22] Charlton BM, Rosario M, Roberts AL, et al. Teen pregnancy risk factors among girls and young women of diverse sexual orientations. *J Adolesc Health* 2015;56:S61–2.
- [23] Das Gupta P. Standardization and decomposition of rates: A user's manual. Washington (DC): U.S. Department of Commerce, Bureau of the Census; 1993:23–186. Available at: <https://www2.census.gov/library/publications/1993/demographics/p23-186.pdf>. Accessed October 1, 2019.
- [24] StataCorp. College Station (TX): StataCorp LLC; 2014.
- [25] Thomas A, Karpilow Q. The intensive and extensive margins of contraceptive use: Comparing the effects of method choice and method initiation. *Contraception* 2016;94:160–7.
- [26] Frost J, Lindberg L. Receipt of contraceptive services among young women in the United States. *J Adolesc Health* 2018;62:S75.
- [27] Schalet AT. Beyond abstinence and risk: A new paradigm for adolescent sexual health. *Womens Health Issues* 2011;21:S5–7.
- [28] Wellings K. Teenage sexual and reproductive behavior in developed countries: Country report for Great Britain. New York: Guttmacher Institute; 2001.
- [29] Wellings K, Palmer M, Geary RS, et al. Changes in conceptions in women younger than 18 years and the circumstances of young mothers in England in 2000–12: An observational study. *Lancet* 2016;388:586–95.
- [30] Hadley A, Ingham R, Chandra-Mouli V. Implementing the United Kingdom's ten-year teenage pregnancy strategy for England (1999–2010): How was this done and what did it achieve? *Reprod Health* 2016;13:1–11.
- [31] Francis JKR, Gold MA. Long-acting reversible contraception for adolescents: A review. *JAMA Pediatr* 2017;171:694–701.
- [32] Providing quality family planning services: Recommendations of CDC and the U.S. Office of population affairs. Atlanta (GA): CDC; 2014.
- [33] Santelli J, Kantor LM, Grilo S, et al. Abstinence-only-until-marriage policies and programs: An updated position paper of the Society for Adolescent Health and Medicine | Elsevier Enhanced Reader. *J Adolesc Health* 2017;61:273–80.
- [34] Twenge JM, Sherman RA, Wells BE. Declines in sexual frequency among American adults, 1989 – 2014. *Arch Sex Behav* 2017;46:2389–401.
- [35] Kearney M, Levine P B. Income inequality and early nonmarital child-bearing. *J Hum Resour* 2014;49:1–31.
- [36] Conrad D. Deprivation-based inequalities in under-18 conception rates and the proportion of under-18 conceptions leading to abortion in England, 1998–2010. *J Public Health (Oxf)* 2012;34:609–14.
- [37] Scott RH, Bajos N, Slaymaker E, et al. Understanding differences in conception and abortion rates among under-20 year olds in Britain and France: Examining the contribution of social disadvantage. *PLoS One* 2017;12:e0186412.
- [38] Gomez AM, Arteaga S, Ingraham N, et al. It's not planned, but is it okay? The acceptability of unplanned pregnancy among young people. *Womens Health Issues* 2018;28:408–14.
- [39] Aiken ARA, Borrero S, Callegari LS, Dehlendorf C. Rethinking the pregnancy planning paradigm: Unintended conceptions or unrepresentative concepts? *Perspect Sex Reprod Health* 2016;48:147–51.