

Seasonality of Premarital First Intercourse among Brazilian Youth

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Abstract

Strengthening of youth-oriented reproductive and sexual health services requires an understanding of the population at risk and their patterns of behaviour. Seasonal clustering of the timing of premarital sexual initiation is a relatively unexplored domain, especially for developing countries. This study examined seasonality of first intercourse and associations of selected socio-demographic characteristic among youth in Brazil. Multiple logit regression models were applied to data from the 1996 Demographic and Health Survey, which included information on month and other attributes of first intercourse among girls and boys ages 15-24. Results revealed a notable peak in summertime first sex for both genders. Little influence of seasonality was found on the likelihood of contraceptive use at sexual initiation. Sexual health education programmes outside of the school setting, as well as school-based programmes occurring towards the end of the academic year, would appear to be more relevant for promoting delayed sexual activity.

Introduction

The strengthening of reproductive and sexual health services for youth in low and middle income countries is a key priority in international frameworks for improving population health. Effective implementation of appropriate services requires an understanding of the population at risk and their patterns of behaviour. Previous research has suggested that sexual activity at younger ages is associated with greater likelihood of unprotected intercourse and multiple partners (Blanc & Way, 1998). At the same time, educational attainment has been found to be independently related to increased contraceptive use during adolescents' first sexual encounter (Gupta, 2000). Programme planners and decision-makers need to be aware of how the adoption of safer versus riskier behaviours is interrelated with other influences, such as schooling, local context or other clustering effects.

Seasonal clustering of the timing of sexual initiation among youth is a relatively unexplored domain, especially for developing countries. Studies in various contexts have examined the seasonality of other reproductive and sexual health-related outcomes, including conceptions, births and onset of menarche (for example, Becker, 1994; Lam, Miron & Riley, 1994; Chompootaweep et al., 1997; Pascual et al., 2002). Less attention has been laid on seasonality of sexual activity, except in terms of frequency of intercourse within marriage. Many studies, particularly in developing countries, have simply assumed a rectangular distribution of first intercourse within the calendar year (Zaba et al., 2002; Ali, Cleland & Shah, 2003).

An examination of the patterns and correlates of seasonality of first sex can help further specify the determinants of early sex among different subgroups. In a study in the United States, Rodgers, Harris & Vickers (1993) observed summer peaks in first sex among adolescents and young adults, which the authors attributed in part to increased libido when temperatures are higher and sunlight longer, and when students are on vacation from school. Among developing countries, testing for seasonality is usually hampered by a lack of data on month of first intercourse.

The 1996 Brazil *Pesquisa Nacional sobre Demografia e Saúde* (PNDS), conducted under the auspices of the Demographic and Health Surveys (DHS) programme, stands out as offering a valuable opportunity for examining seasonal patterns in sexual debut among boys and girls in a context of development. The survey included a number of questions on the attributes of first intercourse, including month of the event. The objective of this study was to assess whether significant seasonal variations existed in the timing of premarital first sex among boys and girls. The main hypothesis was that, rather than following a uniform pattern through the year, the timing of first sex would be concentrated in summer. A secondary hypothesis was that selected characteristics of a first sexual experience would be different according to season, notably that contraceptive use would be lower if first sex occurred during the (presumed) more spontaneous summer months.

Data and methods

The DHS programme has been producing quantitative data on reproductive health knowledge, attitudes and behaviours throughout the developing world since 1984 (Macro International, 2007). The surveys are carried out using standardised instruments, methods of training, data collection and data processing. Personal interviews are conducted among representative samples of women (and increasingly men) of reproductive age, drawing on model questionnaires that have been translated and otherwise adapted to the needs and conditions of the specific country.

The 1996 PNDS, the latest DHS implemented in Brazil, collected information via personal interviews with 12,612 women aged 15-49 and 2,949 men aged 15-59 (BEMFAM, 1997). The standard DHS question on age at first intercourse asked “How old were you when you first had sexual intercourse?” Response options of “never had sex” and “at first union” were allowed in addition to the possible numerical responses for age in years. The Brazil survey further included a series of country-specific questions among 15-24 year-olds, notably month and year of first intercourse.

The present research takes advantage of the inclusion of specific questions on the attributes of first sexual experience among Brazilian youth to test for seasonality. Although the analysis relies on retrospective information, recall bias is assumed to be low since responses are limited to the youngest age groups. Previous studies of survey data quality have suggested that, in general, the quality of reporting of age-related information is better among younger respondents (Blanc & Rutenberg, 1990; Gage, 1995).

In a first step, exploratory analyses were conducted to examine the likelihood that premarital first sex would have taken place in the summer months (December-February). The determination that first sex occurred premaritally was double-checked against the self-report as to whether the date of first sex was at least one month preceding the date of first marriage (encompassing both formal and informal unions). Stability in the seasonality of premarital first sex was assessed using chi-square statistical testing over multiple years. Figures were weighted at the cluster level to reflect the DHS two-stage sampling scheme (random selection of households within enumeration clusters) and ensure national representation.

In a second step, multiple logit regression models were used to monitor associations of selected socio-demographic characteristics with the likelihood of first sex occurring during summer. The goal was to investigate whether the “summer vacation theory” (Rodgers, Harris & Vickers, 1993) could be applicable in a context of development. It was examined whether the risk of summertime first sex would be greater among those with higher education—that is, among those for whom school vacation would have particular salience—while controlling for a number of other confounding factors (including period of sexual initiation, age of first sexual partner, religion, place of residence and childhood residence). Additional logit models were run for investigating influences on the likelihood of contraceptive use during first sex, including the potential effect of seasonality. All results were adjusted for clustering using a random effects estimator, applied with the *Stata* statistical software package (StataCorp, 2001). To facilitate interpretation of the results, comparative risks are expressed as odds ratios (which are calculated by exponentiating the estimated coefficients).

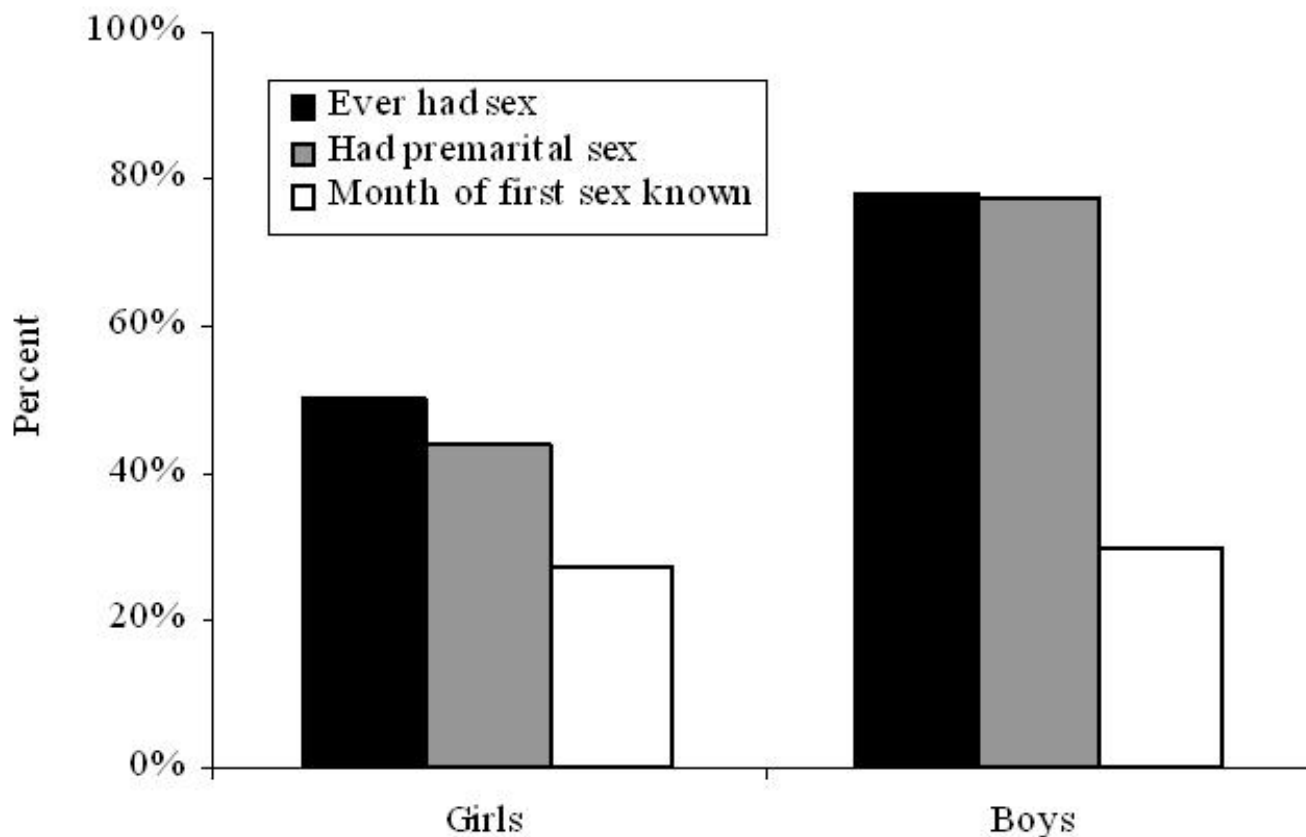
Results

Descriptive findings

As seen in Figure 1, half (50%) of Brazilian girls ages 15-24 at the time of the survey reported sexual experience, with 87% of

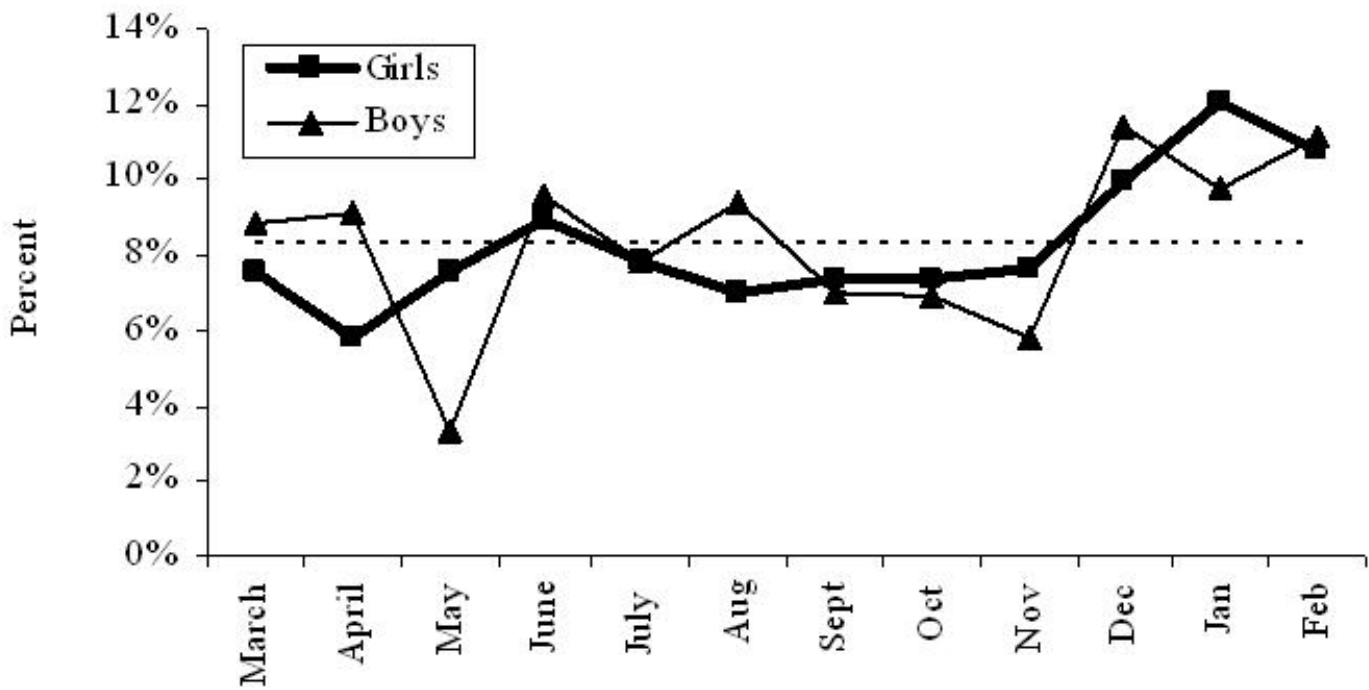
first encounters occurring before marriage. Among boys, 78% were sexually experienced, with almost all (over 99%) of first encounters being premarital. For those having had premarital sex, the month of initiation was documented considerably more frequently among girls (63%) than boys (38%).

Figure 1: Percent of girls and boys ages 15-24 having had sexual intercourse, Brazil, 1996 DHS



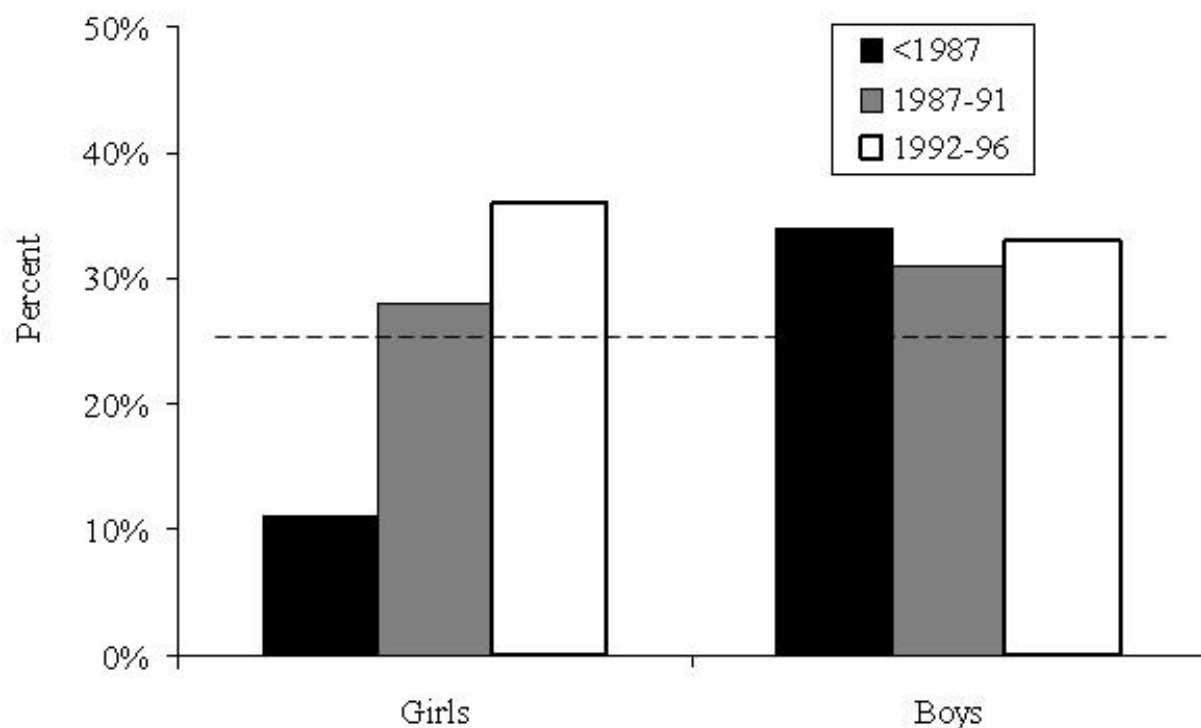
Seasonal clustering of premarital sexual initiation was suggested by the survey data. The distribution of the timing of first sex showed a notable peak during the months of December, January and February (Figure 2). Some 10-12% of first encounters occurred during each of these summer months, against roughly 8% expected under uniform distribution, and this for both sexes.

Figure 2: Monthly distribution of premarital first intercourse among girls and boys under 25, Brazil, 1996 DHS



An increasing likelihood over time was found in girls' premarital first sex to occur during summer (Figure 3), a trend that was statistically significant ($p < 0.01$). Among those who initiated sexual activity during the period 1987-1991, 28% experienced first sex in summer (slightly more than the 25% expected under uniform distribution), a proportion that rose to 36% in the next quinquennial period. On the other hand, for boys, a stable proportion of about 32% of first sexual encounters occurred in summer.

Figure 3: Percent of girls and boys under 25 having had premarital first intercourse in summer, by period of sexual initiation, Brazil, 1996 DHS



Preliminary examination of the attributes of premarital first sex among Brazilian youth does not seem to uphold the summer vacation theory. The proportion of girls who had their first sexual encounter in summer was higher among those with at most primary schooling compared to those with at least some secondary schooling: 40% versus 31% (Table 1). Among boys, the proportion was somewhat higher among those who were better educated, but the difference was not statistically significant.

Table 1: Percent of girls and boys ages 15-24 having had premarital first intercourse in summer, by selected characteristics, Brazil, 1996 DHS

	Girls	Boys
	(N=1143)	(N=302)
Respondent's education		
At most primary	40%	31%
Secondary or higher	31%	33%
Place of residence		
Urban	33%	32%
Rural	32%	33%
Childhood residence		
Urban	33%	31%
Rural	33%	37%

Religion		
Catholic	33%	33%
Other/None	31%	30%
Age of first sexual partner		
Younger/same	35%	26%
Older	32%	37%
Used contraception at first intercourse		
Yes	31%	40%
No	34%	27%

With regard to other selected attributed, among girls, little seasonal variation was found with respect to place of residence, religious affiliation, partner's age or contraceptive use. Boys whose first sexual encounter occurred in summer were more likely to have had an older partner and to not have used contraception.

Regression analysis

Results from the multiple logit regression analysis failed to uphold the summer vacation theory in the context of Brazil – at least not the assumption that a prolonged break from school would offer students more opportunities to pursue other social activities compared to those no longer in school or working all year long. Girls with secondary or higher level of schooling were less likely to have engaged in first sex during the summer months compared to their counterparts with at most primary schooling, after controlling for the series of potentially confounding factors (Table 2). At the same time, a statistically discernible trend towards greater likelihood of summertime first sex over time was noted for girls. Among boys, only partner's age was found to exercise an independent effect, with boys whose partner was older exhibiting greater likelihood of summertime first sex.

Table 2: Adjusted odds ratios from the logit regression models of girls' and boys' premarital first intercourse having occurred in summer, according to selected covariates, Brazil, 1996 DHS

	Girls	Boys
	<i>(N=1143)</i>	<i>(N=302)</i>
Period of sexual initiation		
<1992 (ref)	1.00	1.00
1992-96	1.54**	1.25
Education		
At most primary (ref)	1.00	1.00
Secondary or higher	0.59**	0.26
Place of residence		
Urban	1.17	1.14
Rural (ref)	1.00	1.00
Childhood residence		

Urban	1.16	0.48
Rural (ref)	1.00	1.00
Religion		
Catholic	1.09	1.03
Other/None (ref)	1.00	1.00
Partner's age		
Younger/Same (ref)	1.00	1.00
Older	0.95	1.79*
* p<0.05 ** p<0.01 ref=reference group		

No appreciable influence of seasonality on likelihood of contraceptive use during first sex was found for either sex (Table 3). A positive time-trend was found with regard to the likelihood to use some means of protection from conception for both girls and boys. Among girls, a highly positive effect of schooling was also distinguishable.

Table 3: Adjusted odds ratios from the logit regression models of contraceptives being used during premarital first intercourse, according to selected covariates, Brazil, 1996 DHS

	Girls	Boys
	<i>(N=1140)</i>	<i>(N=298)</i>
Season of sexual initiation		
Summer	0.80	1.92
Other (ref)	1.00	1.00
Period of sexual initiation		
<1992 (ref)	1.00	1.00
1992-96	2.34**	2.93**
Education		
At most primary (ref)	1.00	1.00
Secondary or higher	3.22**	0.92
Place of residence		
Urban	2.10*	1.74
Rural (ref)	1.00	1.00
Childhood residence		
Urban	0.73	1.08
Rural (ref)	1.00	1.00
Religion		
Catholic	1.06	0.88
Other/None (ref)	1.00	1.00
Partner's age		
Younger/Same (ref)	1.00	1.00
Older	0.69	0.94
* p<0.05 ** p<0.01 ref=reference group		

Discussion

As the largest-ever generation of adolescents approaches adulthood, increasing attention is being paid among researchers, policy-makers and programme managers to the reproductive and sexual behaviours of adolescents and young adults, both because of their particular vulnerability to sexual health risks and because early experiences are considered important predictors of lifetime outcomes. Many reproductive and sexual health education programmes target the school-based population (for example, International Planned Parenthood Federation, 2001; Magnani et al., 2001). However, results here suggest that focusing interventions through schools may be insufficient for fostering safer reproductive and sexual health habits among youth, including delayed sexual initiation and increased contraceptive use.

The present study examined seasonal patterns in sexual initiation and contraceptive use among adolescent girls and boys in Brazil, drawing on findings from the 1996 DHS. A distinct advantage of the DHS is the availability of nationally representative data; many other studies of behaviours among youth are limited to sampling of schools. A particular benefit of the Brazil DHS is the availability of specific information on a number of attributes of first sexual experience, including the month of occurrence.

The distribution of the timing of premarital first sex showed a notable peak during the summer months, precisely the period when students are largely on vacation from school. These findings echoed results previously observed in the context of a developed country (Rodgers, Harris & Vickers, 1993). Multiple regression analysis revealed an increasing trend over time in terms of the likelihood of Brazilian girls' premarital first sex to occur during summer, although important gender differences were noted, with the trend being stable among boys.

Encouraging contraceptive use at sexual debut may be particularly important; previous studies have suggested that, in particular, condom use during first sex may be related to future consistent use of condoms (Jenkins et al., 2002; Juarez & Martin, 2006). While an increasing time-trend for contraceptive use was observed for both sexes, only among girls was a positive effect of high levels of schooling appreciable. Seasonal effects on likelihood of contraceptive use at premarital first sex were found to be negligible.

Such findings suggest that sex education programmes outside of the school setting, as well as school-based programmes occurring towards the end of the academic year, may be more relevant for promoting delayed sexual activity among youth. At the same time, further qualitative research may be needed for better understanding the mechanisms which seem to operate in favour of summertime first sex in developing contexts, as this research failed to ascribe the (American-based) "summer vacation theory" to the observed trends. In particular, differences in cultural norms as well as patterns of parental supervision and opportunities for privacy may affect barriers to sexual activity across settings.

Lastly, it is noted that a large number of sexually experienced girls and especially boys failed to report month of first intercourse in the Brazil DHS. As with all household-based survey data, responses from the DHS are not immune to various types of errors, including recall errors due to memory lapses and event omission (either accidental or deliberate). The effect of such omissions on the direction of the timing of first sex remains unknown. However, it is reasonable to assume that any bias in terms of seasonality is small. Most respondents remembered other attributes of their first sexual encounter when asked in the survey, including with whom and whether contraceptives were used. While shifting the timing from one month to another is certainly possible, displacement by an entire season would seem less likely.

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[Return to Front Page](#)