Factors associated with first sexual intercourse among mothers with 14-16 years of age from Porto Alegre/RS, Brazil

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> Abstract This study analyzed the factors associated with first sexual intercourse among 427 mothers with 14-16 years of age from Porto Alegre (RS), Brazil. Data on adolescent socio-demographic status (skin color, religion and schooling gap) and reproductive aspects (age at menarche, age at first sexual intercourse, partnership in first sexual intercourse and partner's age) were collected through household survey. Data analysis was performed using bivariate and multivariate analysis through Poisson regression with robust variance. Among adolescents with early first sexual intercourse (up to 14 years), 77.4% had menarche at up to 12 years of age and 16.4% had casual partners in the first sexual intercourse. These variables were associated with the outcome and showed that early menarche (OR=1.26; CI 95%:1.04-1.52) and casual partner at first sexual intercourse (OR=1.28; CI 95%:1.09-1.49) increase by respectively 26% and 28% the prevalence of early first sexual intercourse. This study highlights the need to strengthen health programs and policies already implemented, such as the School Health Program, as well as reinforces that parents and teachers need to be oriented in an integrated manner in order to facilitate dialogue with adolescents and provide adequate counseling.

Key words Sexuality, Sexual behavior, Adolescent

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Introduction

Adolescence is the life stage in which values, habits and behaviors are developed, with the strengthening of the adolescents' personal identity towards a natural distance from the parents and, consequently, greater independence1. It is often evidenced by attitudes of curiosity, challenge and a feeling of omnipotence, which, together with little life experience and socioeconomic and cultural factors can make adolescents a potentially vulnerable group². The advent of puberty intensifies the sexual feeling that leads adolescents to behaviors that introduce them to adult social life. A study involving children, adolescents and youngsters from primary and secondary schools in 13 Brazilian capitals and the Federal District³ showed that the mean age of the first sexual intercourse among boys varies between 13.9 and 14.5 years, against 15.2 to 16 years among girls. In almost all capitals, more than 10% of adolescents - aged 10-14 years - had already had a first sexual intercourse.

Sexuality is an intrinsic individual component and is crucial in the health of adolescents and young people; it involves biopsychosocial aspects strongly influenced by beliefs, personal and family values, moral norms and societal taboos1. It is, therefore, an important element to individual identity development.

A milestone in young people's lives, the first sexual intercourse has been an ever-present practice in adolescent life. A comparative data analysis from the 1996 Measure DHS (Demographic and Health Survey) Project and the 2006 National Demographic and Health Survey (PNDS) evidenced an increased number of sexually active women in the 15-19 age group, from 30.8% to 53%4. Analyzing the results of a survey conducted in the city of São Paulo with 406 adolescents aged 15-19 years, Borges and Schor⁵ identified that 46.1% had already had their first sexual intercourse.

Not far from the Brazilian reality, international data point to the mean age of first sexual intercourse at 16 years in Malawi in Africa and Ethiopia^{6,7} and 17.8 years in the United States⁸. Data from the survey Adolescence Pregnancy: Multicenter Study on Youth, Sexuality and Reproduction in Brazil (GRAVAD Survey) indicate that male first sexual intercourse occurs, on average, two years before females (median of 16.2 vs. 17.9)9. In a study of a representative sample of undergraduate students enrolled in a state university in São Paulo, Pirotta¹⁰ found a median age of first sexual intercourse of 17 years in the male group and 18 years in the female group. Analyzing the results of the survey with young people from the city of São Paulo, Borges and Schor⁵ identified that the first sexual intercourse occurred on average at 15.13 years of age, with no statistically significant difference between the mean age of first sexual intercourse between males and females (14.94 and 15.29 years, respectively). Comparison between the results of 1996 DHS and 2006 PNDS4 revealed a significant reduction (p<0.0001) of just over half a year in the mean age of first sexual intercourse, from 18.6 to 17.9 years, in an interval of 10 years.

Defined as the first menstruation in a woman's life, the age of menarche is an indicator of sexual maturity in the human growth and development process11. Its precocity can also favor anticipation of the first coitus, since the pubertal hormones intensify sexual desire. Carvalho et al.12 show a series of national and international studies that point to several ethnic-racial, environmental and socioeconomic aspects influencing the age of menarche, especially overweight and obesity.

According to Silva et al.13, menarche occurring before the full twelve years can be considered as precocious. Studies between the 1840s and 1980s in countries such as Sweden, Norway, Finland, Denmark, the Netherlands, England and the United States showed that there was a decrease of about three months in the age of menarche every decade, falling from 17 to 13 years, with a probable relationship resulting from improved social and economic conditions in the countries evaluated. In the same direction of international studies, national studies point to a decreased age at menarche after 1980, showing a decline in several Brazilian cities¹². Guazzelli et al.¹⁴ point out that, with the decreasing trend of the mean menarche age in Brazil, this event is now found in the 11-12 years age group.

When analyzing the relationship between the age of menarche and early first sexual intercourse, Cezimbra11 concluded that the first sexual intercourse usually occurs after menarche and that the later the menarche, the later the first sexual intercourse.

Thus, this study aims to identify factors associated with early first sexual intercourse among mothers aged 14-16 years in Porto Alegre (RS).

Method

This is a cross-sectional study in which the study population is composed of 427 adolescent mothers aged 14 to 16 living in Porto Alegre (RS) who bore children in 2009.

For the sample calculation, data from the 2008 Live Birth Information System (SINASC) was taken as the starting point, in which 850 adolescents became mothers in Porto Alegre (RS). A random selection of half of the adolescents of the age of interest to the study who had children in 2009 was initially planned. However, many losses occurred due to the difficulty of finding addresses or incorrect addresses and incomplete data in the SINASC. Thus, all the mothers who met the eligibility criterion for sample composition were sought up to three times. When not found, they were replaced by another adolescent from the SINASC Porto Alegre until the sample proposed for the study was complete. Adolescents with difficulty in understanding issues or with some cognitive impairment were excluded from the study.

Data collection was performed from July 2009 to May 2010 at the adolescents' homes by interviewers of ULBRA's undergraduate health courses previously trained by the research team to ensure a standard behavior. A pilot study was conducted with adolescents who did not participate in the research to test the procedures adopted and comprehension and completion of the questionnaire.

To collect data, a structured questionnaire was specially developed for the project "Factors associated with adolescent motherhood: a case-control study with youngsters in the 14-16 years age group in Porto Alegre (RS)". Socio-demographic data on adolescents (skin color, religion and schooling gap) and reproductive realm (age at menarche, age at first sexual intercourse, type of partnership in first sexual intercourse, reason for first sexual intercourse, contraception in the first sexual intercourse and partner's age).

Database was built through the Teleform program with the scanning of questionnaires and later data migration to statistical package SPSS 18.0 for Windows for analytical purposes.

A descriptive analysis of the sample was initially made. The association between predictors and outcomes was analyzed using bivariate and multivariate analysis using Poisson regression with robust variance. The multivariate analysis was performed according to the hierarchical model expressed in Figure 1, which allows to verify whether the association between outcome

and the factor under study is direct or mediated by the effect of the other variables. Thus, an adjustment with the analysis variables of the previous levels is made when variables of hierarchical levels closest to the outcome are included. In the multivariate analysis, variables with $p \leq 0.20$ in the bivariate analysis remained in the model. $P{<}0.05$ was considered to identify variables significantly associated with outcome.

This research was elaborated according to Resolution 196/96 of the National Health Council/Ministry of Health¹⁵ and was approved by the Research Ethics Committee of the Lutheran University of Brazil (ULBRA) and by the Municipal Secretariat of Health of Porto Alegre. The Informed Consent Form (ICF) was signed by the responsible for the adolescent or by the very adolescent in case of emancipation.

Results

We interviewed 427 mothers aged 14 to 16 years who bore children in Porto Alegre (RS) in 2009 (Table 1).

According to the sociodemographic characteristics of the respondents, 50.8% were white, 65% practiced some religion and most (90.4%) had at least one year of schooling gap before

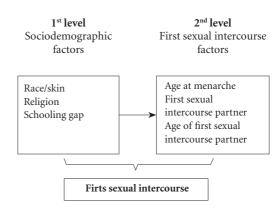


Figure 1. Analysis model of the process of determining first sexual intercourse of mothers aged from 14 to 16 years.

pregnancy against to the expected for their age. According to the characteristics of the sexual and affective life of adolescents, 73.3% had menarche up to 12 years of age, 13.4% had a casual partner in the first sexual intercourse and 53.4% reported that the age of first sexual intercourse partner was 18 years and over.

Of the 427 adolescents studied, 270 (63.2%) had their first sexual intercourse with up to 14 years of age and 157 (36.8%), with 15 years and over. Table 1 shows the comparison of adolescents with early first sexual intercourse (up to 14 years) and those with first sexual intercourse from 15 years of age onwards in relation to the variables studied.

In the bivariate analysis, variables attending religion, age at menarche, partner of first sexual intercourse and age of first sexual intercourse partner reached a level of significance observed below 20%. Of these, menarche up to 12 years of age (PR = 1.26; 95% CI: 1.04-1.52) and casual partner in first sexual intercourse (PR = 1.28; 95% CI: 1.09-1.49) remained in the final model of the multivariate analysis, with a significance of less than 5%. Adolescents who had menarche up to 12 years of age showed 1.26 times greater prevalence of having early first sexual intercourse than those with menarche at 13 years of age and over. It was also observed that adolescents who had their first sexual intercourse with casual partners showed 1.28 times more prevalence of having early first sexual intercourse compared to those with partners with whom they already had an affective relationship.

Discussion

In this study, according to other studies^{11,16}, there was an association between the age at menarche and early first sexual intercourse. Of the adolescents who had first sexual intercourse up to 14 years of age, 77.4% had menarche at 12 years of age or less. This anticipation in the age of first sexual intercourse was also observed by Spindola and Silva¹⁷, who studied adolescents aged 13 to 19 years receiving prenatal care at a university hospital in Rio de Janeiro and found that 69.7% of adolescents had their first sexual intercourse within 3 years after menarche.

Peixoto et al.¹⁶ analyzed 310 pregnant women users of prenatal care at the Family Health Centers of the city of Fortaleza (CE) found a statistically significant relationship between the age at menarche and the age of first sexual intercourse of study participants (p<0.001) and state that the later the menarche, the later the first sexual intercourse.

A study conducted in Malawi in Africa⁶ to assess the sexual behavior of 15-59 year-olds identified a strong association between the age at menarche and the age at the onset of sexual life, where 55% of women who had menarche before 14 years reported having had sex earlier. The mean interval between menarche and early sexual life in this study was 3.5 years for those with menarche below 14 years of age. Another study by Deardorff et al.18 with 666 women aged 18-22 years from four major ethnic groups in Arizona found that early menarche was positively associated with the age of the first sexual intercourse.

Menarche indicates that adolescents are biologically prepared for fertility, but in many situations, they are unaware of the risks of early first sexual intercourse. Thus, early menarche can lead to early first sexual intercourse, most likely motivated by the hormonal changes in the body of adolescents. According to the studies already reported, it is a situation that has emerged increasingly early in the life of adolescents.

This tendency to precocious sexual maturation induces a rationale about the outcome in the near future, where the mean age of menarche will most likely be at 9 or 10 years. It is a condition that will occur in childhood, at which stage it may unleash a series of losses11. But while menarche is a biological factor intrinsic to each individual and its occurrence is related to environmental factors, eating habits and hormonal issues, it is possible to work on factors that may eliminate a risk factor to early sexual maturation, which is obesity and overweight. Dietary adjustment and increased physical activity among adolescents would promote preventive and protective actions around early menarche11,12. Associated with this practice, it is essential to invest in sex education. Knowing body changes and understanding how they can influence the lives of adolescents is fundamental, as it leads them to a reflection of what they really want to experience and facilitates a conscious decision about first sexual intercourse. Using sex education in this process is raising adolescents' awareness and making then accountable for their actions with behaviors that lead them to decide on safe sex practices.

Gender issues have also been important in driving adolescent reproductive choices, particularly at the time of the first sexual intercourse and the first sexual partner. Another factor that was associated with early sexual initiation in this

Table 1. Prevalence, crude and adjusted prevalence ratio (PR) among socio-demographic aspects (1st level), sexual life-related characteristics (2nd level) and early first sexual intercourse. Porto Alegre / RS. 2009-2010.

			First	Crude					
Variables		%	Up to 14 years		15 years and over		PR	(CI 95%)	p
	Freq.		Freq.	%	Freq.	%			
1st LEVEL									
Race (415)									
White	204	49.2	133	50.6	71	46.7	1		
Non-white	211	50.8	130	49.4	81	53.3	0.94	0.82-1.09	0.449
Religion follower (426)									
Yes	277	65.0	169	62.6	108	69.2	1		
No	149	35.0	101	37.4	48	30.8	1.11	0.96-1.28	0.15
Schooling gap before pregnancy (4	27)								
No	41	9.6	27	10.0	14	8.9	1		
Yes	386	90.4	243	90.0	143	91.1	0.95	0.76-1.21	0.70
2nd LEVEL									
Age at menarche (427)									
13 years and over	114	26.7	61	22.6	53	33.8	1		
Up to 12 years	313	73.3	209	77.4	104	66.2	1.25	1.03-1.50	0.02
First sexual intercourse partner (425)									
Boyfriend/husband	368	86.6	224	83.6	144	91.7	1		
Casual partner	57	13.4	44	16.4	13	8.3	1.27	1.08-1.49	0.00
Age of first sexual intercourse parts	ner (423)								
Up to 17 years	197	46.6	134	50.2	63	40.4	1		
18 years and over	226	53.4	133	49.8	93	59.6	0.86	0.75-1.00	0.05
·			First s	exual i	intercou	rse age			
Variables			Up to 14		15 years		- Adjusted PR*	d (CI 95%)	p
		_	yea	rs	and	over	PK		
	Freq.	%	Freq.	%	Freq.	%			
1st LEVEL									
Race (415)									
White	204	49.2	133	50.6	71	46.7			
White Non-white	204 211	49.2 50.8	133 130	50.6 49.4	71 81	46.7 53.3			
Non-white							1		
Non-white Religion follower (426)	211	50.8	130	49.4	81	53.3	1 1.06	0.92-1.23	0.42
Non-white Religion follower (426) Yes	211 277 149	50.8	130 169	49.4 62.6	81 108	53.3 69.2		0.92-1.23	0.42
Non-white Religion follower (426) Yes No	211 277 149	50.8	130 169	49.4 62.6	81 108	53.3 69.2		0.92-1.23	0.42
Non-white Religion follower (426) Yes No Schooling gap before pregnancy (4	211 277 149 27)	50.8 65.0 35.0	130 169 101	49.4 62.6 37.4	81 108 48	53.3 69.2 30.8		0.92-1.23	0.42
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Non-white Religion follower (426) Yes No Schooling gap before pregnancy (4 No Yes 2nd LEVEL	211 277 149 27) 41	50.8 65.0 35.0	130 169 101 27	49.4 62.6 37.4	81 108 48 14	53.3 69.2 30.8 8.9		0.92-1.23	0.42
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Non-white Religion follower (426) Yes No Schooling gap before pregnancy (4 No Yes 2nd LEVEL Age at menarche (427) 13 years and over Up to 12 years First sexual intercourse partner (425) Boyfriend/husband	211 277 149 27) 41 386 114 313	50.8 65.0 35.0 9.6 90.4 26.7 73.3	130 169 101 27 243 61 209	49.4 62.6 37.4 10.0 90.0 22.6 77.4	81 108 48 14 143 53 104	53.3 69.2 30.8 8.9 91.1 33.8 66.2	1.06 1 1.26	1.04-1.52	0.01
Non-white Religion follower (426) Yes No Schooling gap before pregnancy (4 No Yes 2nd LEVEL Age at menarche (427) 13 years and over Up to 12 years First sexual intercourse partner (425) Boyfriend/husband Casual partner	211 277 149 27) 41 386 114 313 368 57	50.8 65.0 35.0 9.6 90.4 26.7 73.3	130 169 101 27 243 61 209	49.4 62.6 37.4 10.0 90.0 22.6 77.4	81 108 48 14 143 53 104	53.3 69.2 30.8 8.9 91.1 33.8 66.2	1.06 1 1.26		0.01
Non-white Religion follower (426) Yes No Schooling gap before pregnancy (4 No Yes 2nd LEVEL Age at menarche (427) 13 years and over Up to 12 years First sexual intercourse partner (425) Boyfriend/husband	211 277 149 27) 41 386 114 313 368 57	50.8 65.0 35.0 9.6 90.4 26.7 73.3	130 169 101 27 243 61 209	49.4 62.6 37.4 10.0 90.0 22.6 77.4	81 108 48 14 143 53 104	53.3 69.2 30.8 8.9 91.1 33.8 66.2	1.06 1 1.26	1.04-1.52	0.01

CI95% = 95% confidence interval; *adjusted by significant variables ($p \le 0.20$) of the first level (sociodemographic factors) and second level (first sexual intercourse factors), excluding those with p > 0.05 after adjustment.

study was the type of partnership in the first sexual intercourse. Of the total number of adolescents interviewed, 13.4% reported having had their first sexual relationship with casual partners.

A study of 406 adolescents aged 15 to 19 years from São Paulo showed that women reported having started their sexual life predominantly with people with whom they already had a stable affective relationship, such as dating or engagement (86%), but this event was also observed in friendship relationships or with a newly-known person (14%)⁵.

According to a study conducted in Maringá (PR)¹⁹ with adolescents aged 12-19 years, 25% of the girls reported having had their first sexual intercourse with a casual partner. Corroborating these data, a study on 310 pregnant women in Fortaleza (CE) found that 6.1% of the female respondents reported having had their first sexual intercourse with a casual partner¹⁶. When comparing these results with those obtained in Jamaica with 406 adolescents, there was a similar situation in which female adolescents who engaged in early sexual activity were 11.95 times more likely to be initiated by partners who were not in stable relationships²⁰.

These results may suggest that the first sexual intercourse of these adolescents occurred in a coercive manner or in the context of sexual violence, or may be evidence of the changes that occurred in the sexual behavior of adolescents. In many coercive situations, adolescents do not always recognize this moment as a sexual violence, because they believe that the first sexual intercourse was natural and according to their wish. They only consider their power of seduction, but they fail to grasp the greater faceted seductive power that an older person can exercise over them11. This situation points to a serious public health problem in which it is necessary to establish prevention and guidance strategies on sexual and reproductive health, both for women and men, in order to minimize the exposure of these adolescents to an unplanned pregnancy or even sexually transmitted diseases such as HIV.

The second situation may be influenced by the uncoupling of sex with procreation with the more frequent use of condoms as a contraceptive method, making possible choices regarding sexual behavior. Thus, sexuality stands out as a field in which this quest for autonomy of projects and practices is exercised in a singular and proper way of each adolescent, where first sexual intercourse is a strong rite in the life of each one, in which identity goes outlining and giving space to the young adult who is developing.

Finally, the limitations of the study should be considered. Causality cannot be established because this is a cross-sectional study. Research on first sexual intercourse is based on information reported by those involved and, thus, may have its importance and meanings influenced by socially accepted values. But the fact that data were collected by female interviewers probably reduced the odds of a non-genuine response and the time elapsed between the event of interest and the time of the interview was relatively short, thus reducing the possibility of memory bias. It should also be noted that schooling gap refers to the period prior to pregnancy, thus, some adolescents may have started their sexual activity before such gap. As the age group was of mothers in 14-16 years age group, it is expected that this fact did not bias the results.

Conclusion

The data of this study indicate the need to contextualize the different events that permeate sexuality in adolescence. Issues and inconsistent information can be minimized through proper guidance. Thus, it is possible to improve adolescents' level of understanding about sexuality, which probably influences the decision of early first sexual intercourse.

In relation to early menarche, there is a need to encourage adolescents to get to know each other, to understand the changes that involve their body and to perceive that they are now prone to an unplanned pregnancy or to sexually transmitted diseases if they do not use preventive methods. Attention should also be given to situations in which relationships occur with people who have recently met, because there may be fewer possibilities of negotiating the use of preventive methods.

This fact points to the need to promote adequate guidance among this population, with comprehensive information on sexual and reproductive health. Parents, teachers, health professionals must be alert and prepared to deal with issues involving sexuality at this stage of life so that they can properly provide advice to adolescents so that the onset of this new experience takes place in a more secure, calm and responsible situation.

It is necessary to provide a positive and healthy stimulus to adolescents towards the knowledge of their own body, sensations and desires so that they develop healthy and protective habits in their relationships. Formal sex education should be encouraged in order to reduce the odds of adolescents having their first sexual intercourse without any prevention.

Therefore, it is important to implement public policies, programs, educational activities and campaigns both in the school environment and in health facilities, to explain sexuality, self-knowledge, contraception and vulnerabilities to which these adolescents are exposed. Family and school participation and the implementation of campaigns aimed at prevention and health promotion are necessary to guide young people in relation to STDs and unplanned pregnancies.

Considering that the adolescents' sexual life begins increasingly earlier, it is important to highlight the importance of health professionals, especially nurses, in schools, planning and implementing educational work with a focus on sexual and reproductive health through workshops, with the aim of forming health multipliers, involving faculty, students, parents and community leaders. The construction of educational practices in the school gives the adolescent the opportunity to question, to be involved and to participate, working on their own issues, allowing questionings and thus softening their anxieties, taboos and myths.

The School Health Program is a great opportunity to put into practice and strengthen guidance on adolescent sex education. It is also of fundamental importance to stimulate conversations between parents and faculty in order to promote more open and transparent conversations with their adolescents, thus preventing them from seeking misinformation with their friends, usually adolescents, who are also beginning to know each other in this development process.

And finally, adolescent sex education must be worked on before sexual practice takes place, and preferably at the time when pubertal processes begin to emerge. Thus, it is easier for adolescents to understand how their body works and the changes that are experienced daily in order to promote responsible attitudes and relationships.

Collaborations

MCR Spinola made the theoretical basis, data analysis and interpretation, paper writing and final approval of the version to be submitted for publication. LB Schermann and JU Béria participated in the design and outline of the broader project, data collection team training, database preparation, paper review and final approval of the version to be submitted for publication. JU Béria also participated as an advisor.

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