

Social vulnerabilities and sexual initiation of 10- to 14-year-old pupils in the city of Rio de Janeiro, Brazil

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Abstract *This study aimed to estimate the prevalence of sexual initiation of pupils aged 10 to 14 who attended the second year of public and private high school in the IX Administrative Region of the city of Rio de Janeiro, Brazil and to identify the most vulnerable subgroups. The sample consisted of 694 pupils who were selected through cluster-based and stratified sampling by considering school type (public or private) and course type (daytime or evening). Information was collected by means of a structured self-administered questionnaire. The chi-square test (χ^2) and 95% confidence intervals were used to assess the heterogeneity of proportions among subgroups. The prevalence of the event was 18.4%; it was higher in boys, in subgroups of greater social vulnerability, among those who hooked up/dated up to 14 years of age, in victims of sexual violence in affective-sexual relationships and in pupils showing health risk behaviors. The high rate of sexual initiation in early adolescence, especially in more vulnerable groups, shows that the situation must be understood and addressed by means of intersectoral public policies that take into account a social context of multiple needs rather than reproductive health alone.*

Key words *Sexual behavior, Sexual and reproductive health, Sexual violence, Adolescent*

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Introduction

Discoveries, social interactions and possibilities for new experiments occur during adolescence and youth in various spheres of life¹. Among these experiences, the first affective and sexual relationships are some of the most important ones. Sexual initiation is seen as an indicator of sexual and reproductive health². It generally takes place between 15 and 19 years of age in Latin America's population^{3,4}. However, sexual and reproductive behavior of adolescents aged 10 to 14, an age period called early adolescence¹, has also been an object of research and the target of health care policies in several countries^{4,5}. That interest increased considerably after the International Conference on Population and Development (ICPD) in 1994⁶, which considered this part of the population one of the most vulnerable groups regarding the violation of their fundamental rights, since part of sexual relations in this age group are not consensual, but rather abusive in nature^{7,8}.

To understand the sexual and reproductive behavior of adolescents and young people, this topic has to be addressed in a multidimensional and contextualized manner, considering ecological systems in which different factors that are related to society, the community and individual relationships interact with each other^{9,10}. Factors such as Western culture, which is rooted in the patriarchal model, influence how society addresses that issue and distinguishes its approach and guidance on sexual behavior, including differences between genders^{3,10,11}. As previous studies point out, men often start sex life earlier and are encouraged to be independent and courageous. In that context, sexual practice is as an act related to the opportunity and affirmation of their masculinity, while women attribute an affective-loving sense to relationships and have a rather romanticized view of sexual relations^{3,4,11-13}.

In Brazil, the debate on sexual and reproductive behavior is still surrounded by taboos, which may reflect its conservative approach to developing sexual and reproductive health education proposals^{4,11}. The topic was gradually included in health and educational sectors from the 1960s according to a hygienist logic, in the perspective of "*scientia sexualis*"^{14,15}. During the 1980s/1990s, due to social movements, the HIV/AIDS epidemic and the context of Brazil's redemocratization, debates made some progress, it became an interdisciplinary topic and was related to others in the proposal of the National Curriculum Parameters of 1995^{15,16}. However, despite these advances, the

current public policy proposals tend to encourage postponement/abstinence from sexual life as a strategy to prevent teenage pregnancy^{4,17}, which has been criticized for diverging from the struggle to ensure the sexual and reproductive rights of this population^{3,4}. Regarding the subgroup of adolescents aged 10 to 14, the debate is even more complex due to legal issues addressed by the Brazilian Penal Code¹⁸ and alarmist discourses about teenage pregnancy. According to data by the Ministry of Health, Brazil counted 3.2 million adolescent mothers between 2011 and 2016, 162,853 (5%) of which belonged to the 10-14 age group¹⁹.

Scientific literature shows that during early adolescence, i.e. the stage of life from 10 to 14 years of age, sexual initiation usually occurs in contexts of greater vulnerability, such as in lower social classes^{10,20}. It is accompanied by health risk behaviors, such as alcohol/drug use, takes place among individuals who are involved with several partners, individuals who resort to unprotected sexual practices and those who lack sufficient knowledge on contraceptive methods^{21,22}. Some authors suggest that these factors, among others, expose this group to a higher risk of sexually transmitted infections (STIs), teenage pregnancy and maternal death^{5,10,21-24}. However, Cabral and Brandão⁴ emphasize that these factors may increase the incidence of sexually transmitted infections (STIs) and unplanned pregnancies in any age group and are thus not a condition that may be associated exclusively with early adolescence.

Given the controversial nature of that discussion, different initiatives aimed at the sexual and reproductive education of adolescents have been adopted by several countries. Some emphasize "sexual majority", such as the UK, which deems that maturity to practice autonomy safely is only achieved at the age of 16²⁵. The USA invests in intervention programs²⁶ and in Brazil, the *Programa Saúde na Escola* (PSE) [Health at School Program]²⁷ – despite being intersectoral – has developed some activities, although in a fragmented way and unrelated to legislation^{17,18}. Further research is still needed to better understand the situations and intervene more effectively to meet the proposals of the "Global Strategy" and of the 2030 Agenda for Sustainable Development that advocate universal access to health, including sexual and reproductive health of adolescents^{10,28}.

It is essential to know the percentage and features of adolescents and young people who started sexual life during early adolescence to better

plan strategies that promote sexual and reproductive education to strengthen young people's autonomy and empowerment based on a context of intersectorality^{5,10}. Analyzing differences between those estimates in the different population subgroups by considering gender, school type and other risk factors of sexual initiation in early adolescence may help develop more effective interventions aimed at conscious and safe sexual practice^{5,10,21}. Based on this perspective, this study aims to estimate the prevalence of sexual initiation between 10 and 14 years and to identify subgroups that are more vulnerable to the situation among public and private school pupils of the IX Administrative Region of the city of Rio de Janeiro, Brazil.

Methods

Study design and scenario

This is a sub-project of a school-based cross-sectional study entitled "Rape of a vulnerable person and other forms of violence against female adolescents" – research funded by the *Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro* (FAPERJ) (Call FAPERJ nº 30/2014). The study scenario included the public and private schools of the IX Administrative Region (AR) of the city of Rio de Janeiro. The IX AR covers four neighborhoods of the city of Rio de Janeiro: Vila Isabel, Andaraí, Grajaú and Maracanã. According to the 2010 Brazilian census²⁹, this region counts approximately 190,000 inhabitants with an average per capita income of BRL 1,836 (USD 1,020 at the time). Families of all socioeconomic levels have lived in that region, in luxury buildings, medium-sized houses and clandestine settlements/favelas³⁰.

Selection strategy and sample size

In the study period, the IX AR of Rio de Janeiro totaled 1,470 pupils who were distributed in 52 classes and were regularly enrolled in the second high-school year in five public schools (714 pupils) and fifteen private schools (756 pupils). The study population was selected through a complex sampling procedure including cluster-based and stratified sampling and by taking into account school types (public or private) and course types (daytime or evening courses). Class selection probability was proportional to school size and all pupils from selected classes were in-

cluded to participate in the research. Among the 747 pupils eligible for the background study, 721 (95.4%) agreed to participate in the research. Of these, 94.4 % (717) were aged between 15 and 24 and were thus eligible for the present study. Additional exclusion criteria included: a) Pupils whose sexual initiation took place before the age of 10 (n=2) and b) Pupils of Asian (n=7) or Indigenous (n=14) descent, given the reduced number of participants in these population subgroups, which would hamper more robust estimates of the prevalence of sexual initiation in early adolescence in these individuals. The final sample of this study consisted of 694 participants.

Data collection and measurement instruments

Data were collected between September 2016 and February 2017 in classrooms using a multi-dimensional structured autocomplete questionnaire whose application was supervised by a previously trained field team.

The most important variable was the occurrence of sexual initiation during early adolescence, i.e., between 10 and 14 years of age. That information was obtained by a direct question on pupils' age at their first sexual intercourse. "Sexual initiation" included positive answers to a structured yes/no-question: "Have you ever had sexual intercourse?". If a participant's first sexual intercourse had occurred between 10 to 14 years of age, he/she was considered to have had "sexual initiation in early adolescence".

The variable race/skin color was created based on the classification of the Brazilian Institute of Geography and Statistics (IBGE). We chose to include only two categories: Whites and the combination Blacks/Browns, who were considered as belonging to the same ethnic group. Gender was classified as either male or female and religion as the participant's current one, which was later categorized as having or not having a religion at the time of the interview. Variables "maternal education" and "family purchasing power" were categorized by means of Brazil's Economic Classification Criterion (CCEB), version 2015³¹ and were measured to characterize the family's socioeconomic status. Originally, the CCEB classifies families in seven categories (A, B1, B2, C1, C2, D and E), where Class A represents the highest and Class E the lowest purchasing power. In the participant profile description, classes "D" and "E" were grouped. To study the prevalence of sexual initiation during early adolescence in the

different population subgroups, classes “A” and “B” were also grouped. In both analyses, categories B1 and B2 and C1 and C2 were grouped into B and C, respectively.

Family structure features were identified through the context of parenthood, based on whether the pupils’ parents were alive or deceased. Cohabitation informed us about who the participant was living with at the time of the study. To identify the maternal background of teenage pregnancy, the pupil’s age was subtracted from the mother’s age at the time of the interview. This variable was called “mother’s age at the birth of the child” and was divided into the following age groups: 10 to 19 years, 20 to 34 years, 35 years and older. School features included school type (public x private) and course type (daytime x evening).

Information on features of sexual initiation, the path of affective-sexual relationships and sexual violence in affective-sexual relationships were identified through structured questions that allowed to identify: age at first sexual intercourse, degree of commitment between peers, such as “hooking up”, “dating”, and same-sex sexual experience. Those data were obtained by means of the following questions: “Have you ever ‘hooked up’ or had any non-commitment love relationship with someone?” and “Have you ever dated someone?”. Pupils who answered “yes” to any of these questions were asked how old they were when that kind of relationship first occurred. Classification of individuals according to same-sex sexual experience was based on the question “Have you ever had a sexual experience/intimate contact with a person of the same sex?”. All of these variables were “Yes/No” questions.

Information on sexual victimization in affective-sexual relations was obtained by means of the Portuguese version of the Conflict in Adolescent Dating Relationships Inventory (CADRI), created by Wolfe *et al.*³² and initially adapted and validated for its use in Brazil by Minayo *et al.*¹³. The version of the instrument we used contains 28 items, 25 of which refer to the various forms of violence in dating, such as emotional violence, physical violence, sexual violence, relational violence and threat. This study merely used the victimization of sexual violence subscale, which only takes into account events that took place in the last twelve months. Sexual violence was deemed present if at least one item of the above-mentioned subscale showed a positive answer.

The use of substances such as alcohol, tobacco and marijuana in the last three months was

evaluated as binary “Yes/No” variables using The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) by the World Health Organization (WHO)³³.

Data analysis

Prevalence of sexual initiation during early adolescence, as well as its 95% confidence intervals (95%CI) were estimated in the total population and in the groups of male and female adolescents. A Chi-Square test (χ^2) was performed to evaluate the heterogeneity of the proportions of the population subgroups and a p -value < 0.05 was adopted to identify statistically significant differences. The co-occurrence profile between adoption of risk behavior and violence during dating among boys and girls with and without sexual initiation in early adolescence was plotted using the Venn Diagram. Adoption of risk behavior included misuse of alcohol, tobacco and marijuana. All analyzes took into account the complex sampling structure and were performed by means of the Stata 13 software program³⁴.

Ethical aspects

The study met all ethical standards of Resolution 466/2012 by the National Health Council and was approved by the Research Ethics Committee (CEP) of the University of the State of Rio de Janeiro (UERJ) on 09/18/2015, CAAE by decree No. 48107514.2.0000.5282 and approved by the State Department of Education of Rio de Janeiro.

Results

Table 1 shows that 53.3% of the participants were females, most of which were between 15 and 18 years old; 53.2% declared to be white and 65.3% attended some religious institution at the time of this research. Regarding the socioeconomic situation of their families, a large part (45%) were children of mothers who had a high-school or academic degree and belonged to Economic Class B. More than 80% reported that their parents were alive and only few of them did not know or had never met their father (9.0%).

Regarding family arrangements, almost 80% were living with either both their parents or one parent and 13.5% showed a background of maternal teenage pregnancy. More than 60% of the pupils attended private schools, mostly daytime

Table 1. Sociodemographic, family and school environment profile of adolescents and young people from the IX AR of the city of Rio de Janeiro-RJ, 2017.

	Total n=694			Gender						p- value
				Male n=320 (46.7%)			Female n=374 (53.3%)			
	n	%	95%CI	n	%	95%CI	n	%	95%CI	
Demographic and socioeconomic features										
Age										
15 to 16	272	48.5	40.8-56.3	113	44.1	35.5-53.0	159	52.3	44.2-60.2	0.12
17 to 18	364	46.4	39.3-53.7	172	49.6	41.9-57.3	192	43.7	35.9-51.7	
19 to 24	50	5.1	3.6-7.2	28	6.3	3.7-10.5	22	4.0	2.2-7.2	
Race/Skin color										
White	325	53.2	45.6-60.5	142	49.6	41.2-58.0	183	56.3	47.4-64.7	0.15
Black/Brown	365	46.8	39.5-54.4	176	50.4	42.0-58.7	189	43.7	35.3-52.6	
Current religion										
Yes	474	65.3	59.0-71.1	200	59.9	51.3-68.0	274	70.0	63.4-75.9	0.01
No	217	34.7	28.9-41.0	119	40.1	32.0-48.7	98	30.0	24.1-36.6	
Mother's educational level										
Illiterate/Elementary Education I (E.E. I) incomplete	40	5.0	3.5-7.2	17	5.3	2.8-9.7	23	4.7	2.9-7.5	0.26
E.E. I completed/ E.E. II incomplete	142	17.4	14.0-21.2	62	15.2	11.1-20.4	80	19.2	14.1-25.8	
E.E. II completed/E.M. incomplete	238	32.5	26.2-39.5	110	30.7	22.6-40.0	128	34.2	28.1-40.8	
High School completed/Higher Education incomplete	77	13.5	11.2-16.2	39	16.9	12.7-22.1	38	10.6	7.3-15.0	
High School completed	162	31.6	24.7-39.4	76	31.9	24.4-40.6	86	31.3	23.5-40.3	
Economic class (CCEB)										
A	90	17.2	13.4-21.9	47	19.2	14.1-25.7	43	15.5	11.1-21.4	0.16
B	324	54.8	51.1-58.4	150	56.5	50.5-62.4	174	53.3	47.6-58.8	
C	209	26.6	22.4-31.2	89	23.5	19.0-28.6	120	29.2	23.5-35.6	
D and E	14	1.4	0.8-2.5	4	0.8	0.3-2.3	10	2.0	0.9-4.2	
Family context and maternal teenage pregnancy background										
Parents										
Mother and father are alive	600	88.3	85.8-90.4	279	88.3	84.0-91.6	321	88.2	83.8-91.6	0.98
Only one parent is alive	94	11.7	9.6-14.2	41	11.7	8.4-16.0	53	11.8	8.4-16.2	
Father is alive										
Yes	621	91.0	88.6-92.9	285	89.8	85.5-92.9	336	92.1	88.4-94.6	0.38
Does not know/Does not know him	72	9.0	7.0-11.3	35	10.2	7.1-14.5	37	7.9	5.3-11.6	
Living conditions										
Lives with his/her father and mother	301	44.4	40.9-47.9	139	43.3	37.0-50.0	162	45.3	38.8-51.9	0.82
Lives either with his/her father or his/her mother	229	34.8	31.7-38.0	105	34.8	30.1-39.7	124	34.8	30.2-39.8	
Lives with his/her mother/father and stepfather/stepmother	112	15.0	12.8-17.6	54	16.3	12.3-21.3	58	13.9	10.8-17.8	
Lives with other people	48	5.8	4.2-7.8	21	5.6	3.9-8.0	27	6.0	3.9-9.1	
Age at which his/her mother gave birth										
10 to 19	100	13.5	10.7-17.0	47	14.9	10.5-20.7	53	12.4	9.1-16.6	0.61
20 to 34	463	70.3	62.4-77.1	205	68.6	58.7-77.0	258	71.8	63.9-78.5	
35 or older	84	16.2	10.0-25.1	42	16.5	10.4-25.3	42	15.8	9.1-26.1	
School features										
School type										
Public	387	36.9	32.0-42.1	175	35.4	30.0-41.2	212	38.2	30.0-47.2	0.59
Private	307	63.1	57.9-68.0	145	64.6	58.8-70.0	162	61.8	52.8-70.0	
Course type										
Daytime course	585	90.4	88.2-92.2	261	89.0	84.9-92.1	324	91.7	88.4-94.1	0.29
Evening course	109	9.6	7.8-11.8	59	11.0	7.9-15.1	50	8.3	5.9-11.6	

Source: Authors.

courses. There was no statistically significant difference in the distribution of these features according to gender, except for religious practice, whose percentage was slightly higher among girls (Table 1).

Table 2 shows the features of the population studied in relation to the context of sexual initiation, the paths of affective-sexual relationships and health risk behaviors. It shows that 18.4% of the participants were sexually initiated during early adolescence and that half of the total study population started their affective/love path at

that age as well, including the “hooking up” and “dating” modalities. Approximately 17% reported having had a same-sex sexual experience and 40% of them responded positively to at least one of the items that make up the scale of sexual victimization in dating. More than 70% of them claimed to have consumed alcohol, just over 22% tobacco and approximately 20% marijuana. Analysis of prevalence according to gender showed that sexual initiation during early adolescence was twice as high in boys than in girls (25.7% x 12.2%) and a sexual experience with a

Table 2. Features of sexual initiation, affective-sexual relationship background, and health risk behaviors of adolescents and young people from the IX AR of the city of Rio de Janeiro-RJ, 2017.

	Total n=694			Gender						p- value
				Male n=320 (46.7%)			Female n=374 (53.3%)			
	n	%	95% CI	n	%	95% CI	n	%	95% CI	
Features of sexual initiation and affective-sexual relationship background										
Sexual initiation in early adolescence										
Yes, aged<15 years of age	138	18.4	15.5-21.7	85	25.7	21.2-30.6	53	12.2	8.8-16.7	0.00
No/Occurred≥15 years of age	547	81.6	78.3-84.4	230	74.3	69.3-78.8	317	87.8	83.3-91.2	
Has already hooked up/dated										
Yes, aged<15	322	50.8	45.6-56.0	162	56.5	47.3-65.3	160	45.9	41.9-49.9	0.10
Yes, aged≥15	315	40.5	33.6-47.7	134	36.9	29.2-45.4	181	43.5	36.4-50.9	
No	54	8.7	5.7-13.2	22	6.6	3.6-11.7	32	10.6	5.8-18.6	
Has had a same-sex experience										
Yes	110	16.6	13.7-19.9	32	9.7	6.2-14.6	78	22.5	17.0-29.2	0.00
No	576	83.4	80.1-86.3	281	90.3	85.4-93.7	295	77.5	70.8-83.0	
Victimization of sexual violence in affective-sexual relationships										
Yes	230	40.0	35.7-44.5	107	43.3	36.7-50.2	123	37.4	28.6-47.1	0.41
No	314	60.0	55.5-64.3	138	56.7	49.8-63.3	176	62.6	52.9-71.4	
Health risk behaviors in the last 3 months										
Use of alcohol										
Yes	471	71.1	66.8-75.1	211	68.8	63.2-73.8	260	73.1	67.9-77.8	0.16
No	215	28.9	24.9-33.2	106	31.2	26.2-36.8	109	26.9	22.2-32.1	
Use of tobacco										
Yes	147	22.2	18.2-26.8	60	20.8	15.9-26.8	87	23.4	17.2-31.0	0.57
No	540	77.8	73.2-81.8	257	79.2	73.2-84.1	283	76.6	69.0-82.8	
Use of marihuana										
Yes	133	19.7	16.4-23.5	59	21.1	16.1-27.0	74	18.5	13.4-25.1	0.56
No	554	80.3	76.5-83.6	258	78.9	73.0-83.8	296	81.5	74.9-86.6	

Source: Authors.

person of the same sex was more often reported by girls.

Table 3 reveals that sexual initiation during early adolescence was more frequent among pupils whose mothers had a lower educational level. Regarding school features, there was a higher percentage among pupils from public schools and evening courses. There are some differences between boys and girls as well. Sexual initiation during early adolescence was more frequent among girls from “D” and “E” social classes, among those who had only one parent or none alive and among those whose mothers were adolescent at the time their daughters were born. Those features seem to be unrelated to the age of sexual initiation of the boys.

The prevalence of the event was also analyzed according to the features of their affective-sexual relationship path and health risk behaviors (Table 4). The prevalence was higher among those who claimed to have hooked up/dated before the age of 15; among those who mentioned victimization of sexual violence in affective-sexual relations in the last twelve months; and among those who used substances such as alcohol, tobacco, and marijuana in the last three months. If we focus on the male population alone, the above-mentioned features repeat themselves, while the prevalence was not higher among those who report alcohol use among girls.

Figure 1 shows that most adolescents and young people accumulate different risk behaviors and sexual victimization in their affective-sexual relationships. Accumulation of vulnerabilities occurs especially in boys whose sexual initiation took place between 10 and 14 years of age.

Discussion

Study results show that the sexarche of about 1/5 of the participants took place during early adolescence, which is reported twice as much by boys than by girls. These results are similar to those found by Gonçalves *et al.*²⁴ who conducted a survey of 4,325 adolescents from a birth cohort in Pelotas, Rio Grande do Sul, Brazil, which found that 18.6% of the adolescents went through sexual initiation before the age of 15 (20.9% of the boys and 16.4% of the girls). However, our study shows a greater difference between boys and girls. A similar profile was found by the 2015 National School Health Survey (PeNSE)³⁵, according to which 27.0% of the 13-15-year-old pupil subgroup reported having had sexual intercourse

in the past (34.5% of the boys and 19.3% of the girls). Those findings corroborate the idea of gender asymmetry in the sexual and reproductive health area, regardless of the fact that male puberty takes place later than the female one.

Sexual initiation during early adolescence was also more frequent in pupils of subgroups inserted in contexts of greater social vulnerability. PeNSE 2015's³⁵ results had already drawn the attention to that profile as they show that 29.7% of the public school pupils went through sexual initiation before the age of 15, against only 15.0% of the private school pupils. The nature of this study did not allow us to investigate what caused the large gap between public and private schools or between daytime and evening course. However, pupils who attend public school evening courses accumulate additional social disadvantages, as they belong to low-income families, have a lower educational level and are inserted in the labor market performing low-wage jobs.

Living with adults in charge also seems to postpone sexarche. PeNSE (2009) data analysis shows that 42.1% of the pupils who do not live with their parents had sexual intercourse at some point in the past, against only 26.6% of the pupils who live with their parents³⁶. In our study, although the frequency was twice as high among girls who had either no contact with their father or no living father, this difference was not statistically significant. Maternal teenage pregnancy background has also been addressed by the literature as a bond of identification and connection, especially between mothers and daughters, which suggests that sexual and reproductive background repeats itself across generations^{23,24,37,38}. The study by Gonçalves *et al.*²⁴ also showed that the earlier the mother's pregnancy occurred, the higher the prevalence of sexual initiation in early adolescence in the next generation. According to the authors, 42.9% of the girls whose mothers got pregnant by the age of 14 also went through sexual initiation during early adolescence, while only 20.9% of the girls whose mothers got pregnant between 15 and 19 had their first sexual contact before the age of 15. It is worth noting that this trend did not occur among boys, which corroborates Dias and Teixeira's³⁷ statement that intergenerational transmission only takes place in mothers and daughters. A multi-centric study that was conducted in three Brazilian cities (GRAVAD research) and involved approximately 4,600 subjects aged 18 to 24 years also mentions that the maternal teenage pregnancy background repeats itself in girls only³⁸.

Table 3. Prevalence of sexual initiation in early adolescence according to demographic, socioeconomic, family and school features of adolescents and young people of the IX AR of the city of Rio de Janeiro-RJ, 2017.

	Sexual initiation in early adolescence (10-14 years of age)											
	Total n=694				Gender							
	n	%	95%CI	P-value	Male n=320 (46.7%)				Female n=374 (53.3%)			
n					%	95%CI	P-value	n	%	95%CI	P-value	
Demographic and socioeconomic features												
Age												
15 to 16	269	16.2	11.5-22.4	0.29	111	22.4	16.2-30.0	0.26	158	11.9	6.5-20.8	0.90
17 to 18	361	20.2	16.1-25.0		171	27.8	20.6-36.3		190	12.8	9.6-16.9	
19 to 24	47	24.7	16.2-35.9		26	35.8	23.0-51.1		21	10.1	3.4-26.5	
Race/Skin color												
White	324	17.1	12.9-22.3	0.41	141	24.6	17.6-33.3	0.71	183	11.4	6.2-20.0	0.71
Black/Brown	357	19.8	15.9-24.3		172	26.6	20.6-33.7		185	13.0	9.3-18.0	
Current religion												
Yes	468	19.5	15.8-24.0	0.25	198	28.0	22.6-34.0	0.28	270	13.2	9.4-18.3	0.15
No	214	15.9	11.9-21.0		116	22.2	15.0-31.7		98	8.8	4.9-15.6	
Mother's educational level												
>4 years	613	17.7	14.8-21.1	0.01	285	25.2	20.3-30.7	0.08	328	11.2	7.9-15.5	
≤4 years	38	34.5	21.6-50.2		15	51.3	23.3-78.5		23	22.6	10.3-42.5	0.09
Economic class (CCEB)												
A and B	411	18.8	15.7-22.3	0.16	195	26.5	21.4-32.3	0.92	216	11.6	7.5-17.5	0.02
C	206	18.1	13.4-23.8		88	27.8	18.3-39.8		118	11.4	7.9-16.3	
D and E	13	38.0	17.4-64.1		3	36.6	3.9-89.1		10	38.3	14.8-69.0	
Family context features												
Parents												
Mother and father are alive	594	17.7	14.7-21.2	0.14	277	25.8	21.4-30.8	0.84	317	10.7	7.3-15.3	0.02
Only one parent or none is alive	91	24.0	16.3-33.9		38	24.4	13.0-41.0		53	23.8	13.7-37.9	
Father is alive												
Yes	615	17.8	14.7-21.4	0.15	283	25.6	21.1-30.6	0.93	332	11.1	7.5-16.3	0.06
No/Does not know or Does not know him	69	25.7	16.1-38.3		32	26.3	13.7-44.5		37	25.1	12.5-43.9	
Living conditions												
Lives with his/her father and mother	296	15.8	11.8-20.8	0.14	137	24.4	17.0-33.6	0.65	159	8.6	5.1-14.3	0.14
Lives with other people	385	20.5	16.5-25.1		177	26.8	21.3-33.3		208	14.8	9.5-22.4	
Age at which his/her mother gave birth												
10 to 19	98	28.2	20.9-36.9	0.09	47	30.6	20.4-43.1	0.33	51	25.7	14.9-40.7	0.01
20 to 34	459	16.6	13.3-20.4		203	23.5	18.1-30.0		256	11	7.7-15.5	
35 or older	82	20.8	11.8-34.2		40	38.9	15.8-68.4		42	6.4	2.2-17.2	
School features												
School type												
Public	381	24.5	20.8-29.0	0.00	173	32.8	26.2-40.2	0.02	208	17.8	13.9-22.5	0.04
Private	304	14.9	11.2-19.5		142	21.6	16.0-28.6		162	8.8	4.5-16.6	
Course type												
Daytime course	579	17.0	14.0-20.5	0.00	258	23.9	19.3-29.2	0.03	321	11.2	7.7-16.1	0.03
Evening course	106	32.3	25.4-40.1		57	40.2	25.8-56.6		49	23.3	13.3-37.5	

Source: Authors.

It is important to highlight that the differences between subgroups according to the vulnerability profile of families were especially visible in girls. Those, when inserted in a family context of greater social vulnerability such as low-income families, low maternal education, dissolution of the two-parent family and a maternal adolescent pregnancy background, began having sexual contacts at an earlier age.

Data on participants' affective-sexual relationship path help understand the context of sexual initiation of adolescents and young people¹³. A study on factors associated with sexual initiation involving 427 mothers aged 14 to 16 from Porto Alegre-RS, Brazil shows that casual partnerships increased the prevalence of sexual initiation in early adolescence by 28%³⁹. Study results also show a higher prevalence of sexual initiation during early adolescence among girls who

reported sexual victimization in affective-sexual relationships in the last 12 months. Thus, it is essential to include the discussion on violence in affective-sexual relationships among adolescents to characterize the profile of individuals who are having their first sexual experience before the age of 14¹⁰. It is extremely relevant to prioritize that issue due to the evidence that points to a higher risk of violence in the first affective-sexual relationships¹⁰, its serious negative consequences to health and because these experiences may turn into risk factors for victimization at other life stages¹³.

Use of substances such as tobacco, alcohol and illicit drugs has often been highlighted in the literature as part of health risk behaviors associated with a decrease in the age of the first sexual intercourse²⁰ and the use of illicit drugs and tobacco in the last three months. However,

Table 4. Prevalence of sexual initiation in early adolescence according to features of affective-sexual relationships and health risk behaviors of adolescents and young people in the IX AR of the city of Rio de Janeiro-RJ, 2017.

Sexual initiation in early adolescence (10-14 years of age)												
Total n=694				Gender								
				Male n=320 (46.7%)				Female n=374 (53.3%)				
	n	%	95%CI	P-value	n	%	95%CI	P-value	n	%	95%CI	P-value
Affective-sexual relationships												
Has already hooked up or dated												
Yes, age<15	320	26.5	21.9-31.8	0.00	161	31.9	25.8-38.7	0.00	159	20.9	15.0-28.3	0.00
Yes, age≥15	312	11.5	8.6-15.3		132	19.1	13.3-26.5		180	6.0	3.6-10.0	
No	53	3.4	0.8-14.1		22	9.7	2.8-28.6		31	0.0	--	
Same-sex sexual experience												
Yes	110	21.0	13.8-30.7	0.53	32	41.6	24.7-60.7	0.06	78	13.5	7.7-22.6	0.68
No	573	18.0	14.6-22.0		281	24.2	19.3-29.8		292	11.8	8.0-17.1	
Sexual violence in affective-sexual relationships in the last 12 months												
Victimization in affective-sexual relationships												
Yes	229	29.3	23.2-36.1	0.00	107	40.4	30.6-51.1	0.00	122	18.8	11.7-28.7	0.09
No	312	14.8	11.2-19.3		137	19.1	13.9-25.7		175	11.6	7.7-17.2	
Health risk behaviors in the last three months												
Use of alcohol												
Yes	468	21.5	17.6-26.0	0.00	208	31.6	24.9-39.2	0.00	260	13.4	8.9-19.6	0.34
No	213	11.3	7.9-15.8		106	13.1	9.1-18.3		107	9.5	5.3-16.3	
Use of tobacco												
Yes	147	28.9	21.0-38.3	0.00	60	37.2	25.6-50.5	0.02	87	22.4	13.9-34.1	0.01
No	535	15.5	12.4-19.2		254	22.6	18.7-27.0		281	9.1	5.9-13.8	
Use of marihuana												
Yes	133	34.3	26.8-42.6	0.00	59	41.5	30.1-54.0	0.00	74	27.0	19.5-37.6	0.00
No	549	14.6	11.2-18.7		255	21.4	16.7-27.0		294	8.9	5.8-13.5	

Source: Authors.

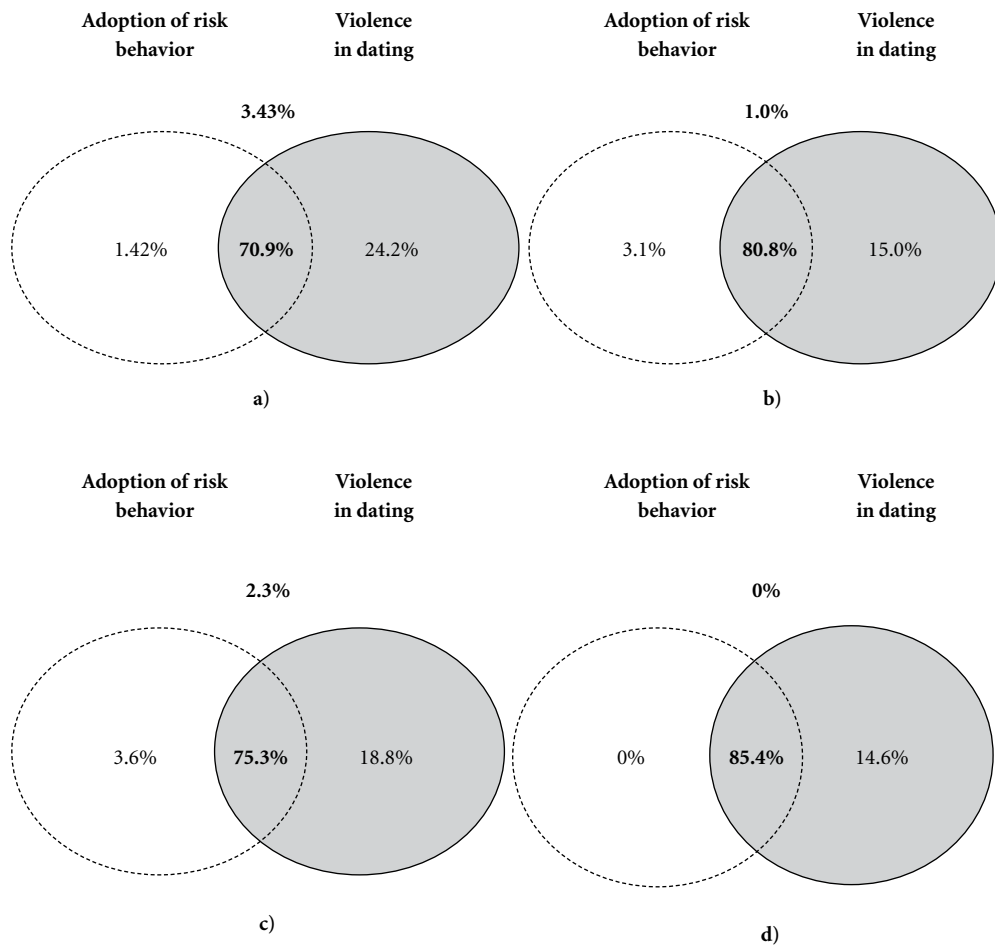


Figure 1. Co-occurrence of adoption of risk behavior and violence in dating of boys and girls with and without sexual initiation in early adolescence of adolescents and young people from the IX AR of the city of Rio de Janeiro-RJ, 2017.

Note: (a) boys without sexual initiation in early adolescence; (b) boys with sexual initiation in early adolescence; (c) girls without sexual initiation in early adolescence; (d) girls with sexual initiation in early adolescence.

Source: Authors.

unlike our findings, the authors found no association between the event and the use of alcoholic beverages in this period. Our study also identified a high number of adolescents and young people who had their first sexual experience in early adolescence among those who made use of these substances. Results show that a good part of adolescents and young people whose sexual initiation took place during early adolescence and used substances also reported some degree of sexual violence in their love relationships. If we combine this information with the fact that

many of these pupils belong to families of a low socioeconomic status, who lack a father figure, whose mothers became pregnant during adolescence, that they and are inserted in the labor market performing low-wage jobs and therefore have to study in the evening, we find that these adolescents accumulate numerous factors that explain their social vulnerability^{22,40}.

Simultaneous occurrence and accumulation of vulnerabilities has been reported by several authors. The relationship between alcohol/drug misuse and dating violence, e.g., has also been

mentioned by O'Keefe⁴¹ and by Shorey *et al.*⁴². Audi *et al.*⁴³ also show that a first pregnancy before the age of 16, as well as the partner's use of tobacco, alcohol or illicit drugs are associated with victimization of physical/sexual violence committed by intimate partners of pregnant women who attended prenatal care at a public health clinic in Campinas-SP, Brazil. A longitudinal study conducted in US schools involving 1,199 pupils with childhood behavior issues and/or family adversities took into account three risk behavior indicators, i.e., sexual initiation between 13 and 14 years of age, use of tobacco, and use of alcohol/drugs concluded that these behaviors belong together and are important high-risk factors of other adverse situations, such as teenage pregnancy and sexually transmitted infections²¹.

The results of this study need to be interpreted in light of its limitations and strengths. Regarding limitations, it is noteworthy that the definition of cases of sexual initiation in early adolescence was based exclusively on the answer to the direct question on having had "sexual relations". Participants may interpret "sexual relation" in different ways, according to their social, moral, religious and cultural background. In this sense, cases involving other forms of sexual expression without penetration, e.g. oral sex, may not have been considered. The lack of information on gender identity, age of menarche and other variables of reproductive background, such as number of partners and use of contraceptive methods are also limitations, since they would add to information on risk behavior. We suggest that these variables be considered in future studies on the topic.

Strengths of this study include a sufficiently large sample that allowed us to obtain quite accurate estimates and the study in subgroups. Another strength is the high representativeness of the study sample regarding the group of adolescents and young people attending high school in Rio de Janeiro, since it includes public and private school pupils from diverse city areas who were selected through probabilistic sampling. The use of consolidated auto-complete forms to identify situations of violence in dating and use of alcohol/drugs should also have increased the level of accuracy of our estimates. The wide

range of features analyzed to build the profile of participants who had their first sexual contact by the age of 14, considering not only health risk behaviors usually included for this purpose, but also socioeconomic, cultural, family, and school aspects, as well as those related to affective-sexual relationships, provided a panoramic view of the factors related to the studied event, which is another positive point of our research.

Final considerations

Study results corroborate what has been pointed out by the literature, i.e., certain population subgroups start sexual life earlier than others. Those results also contribute to the debate on peculiarities of sexual and reproductive health of younger adolescents. It is essential to highlight that sexual initiation during early adolescence does not seem to be a problem situation as such if we take into account how relevant it is for adolescents and young people to learn about sexuality and build affective-sexual relationships. However, differences found among subgroups suggest that acquiring information and achieve maturity and autonomy in this area of life is not always equitable. The higher rate of sexual initiation at an early age among boys, among pupils from families with a lower socioeconomic status, among those who experience violence in affective-sexual relationships and those who assume health risk behaviors shows that this group is more vulnerable to adversity. That accumulation of risk situations implies that actions aimed at the full development of adolescents and young people need to be multi-thematic, intersectoral and take into account the specific features of every target public. In this sense, we emphasize the role of the school as a privileged space for socialization, acquisition of knowledge about sexuality and deconstruction of rigid social gender roles in affective-sexual relations. At the same time, we highlight how essential it is that actions that take place at schools interact with other social policies and the legislation to empower adolescents and young people in such a way that they may consciously decide when to start their sexual and reproductive life in an autonomous and safe way.

Collaborations

All authors participated effectively in the research and in the elaboration of the manuscript. SF Costa, CL Moraes and SR Taquette participated in study design, data collection and analysis, as well as preparation and final review of the manuscript. ES Marques participated in data analysis, drafting and final review of the manuscript.

Funding

Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ) (Call FAPERJ N° 30/2014).

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Article submitted 08/11/2021

Approved 18/01/2022

Final version submitted 20/01/2022

Chief editors: Romeu Gomes, Antônio Augusto Moura da Silva