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Prevalence of sexual initiation and associated factors in school adolescents in Piauí, Brazil, 2015

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ABSTRACT

Objective: to analyze prevalence of sexual initiation and associated factors in adolescents in Piauí. **Methods:** this was a cross-sectional study, with secondary data from the 2015 National Adolescent School-based Health Survey. Hierarchical analysis was performed using robust Poisson regression. **Results:** a total of 3.872 adolescents were interviewed. Prevalence of sexual initiation was 24.2%; risk factors for sexual initiation were being male [prevalence ratio (PR) = 2.18; 95% confidence interval (95%CI) 1.90;2.47], being 15 years old or over (PR = 2.49; 95%CI 2.18;2.76), living with mother (PR = 0.68; 95%CI 0.54;0.82), working (PR = 1.82; 95%CI 1.55;2.10), attending a public school (PR = 1.39; 95%CI 1.09;1.75), practicing bullying (PR = 1.50; 95%CI 1.31;1.72), using alcohol (PR = 2.35; 95%CI 2.09;2.64), using cigarettes (PR = 1.46; 95%CI 1.22;1.70) and using illicit drugs (PR = 1.40; 95%CI 1.15;1.66). **Conclusion:** prevalence of sexual initiation was high and associated with sociodemographic characteristics and vulnerable health behaviors, indicating the need for health promotion strategies.

Keywords: Sexual and Reproductive Health; Sexual Behavior; Adolescent Behavior; Adolescent Health; Student Health; Cross-Sectional Studies.

INTRODUCION

Sexual initiation is considered a relevant component of social development in adolescence. Influenced by beliefs and taboos, personal and family values, and adequate access to information and schooling, the average age of sexual initiation decreased among high-income countries between 1920 and 1970.[1] Despite the variation between countries, however, young people who reached age 15 between 1975-1979, compared to those who reached age 15 between 1995-1999, showed no universal trend toward earlier sexual intercourse.[2] In Brazil, average age at first intercourse in 1996 was 19.5 years for females and 16.7 for males,[3] while in 2015 it decreased to 12.9 among boys and 13.7 among girls.[4]

First sexual intercourse is considered early when it occurs before the age of 15 and can bring negative consequences for the sexual and reproductive health of adolescents, with emphasis on increased vulnerability to risky health behaviors, unplanned pregnancy and sexually transmitted infections (STIs).[5] Use of alcohol, tobacco and illicit drugs, school dropout, low parental involvement with adolescents, as well as absence of guidance about pregnancy at school are associated with early sexual initiation and higher prevalence of having sex without using condoms.[6,7] In this sense, schools are indicated as the main space for taking part in educational activities about sexual and reproductive health.[2,5]

Adolescents who start having sex early usually do not have enough knowledge about STIs, correct ways of using condoms and other contraceptive methods, and often have misconceptions about these issues.[8] In Brazil, data from the National Adolescent School-based Health Survey (*Pesquisa Nacional de Saúde do Escolar* – PeNSE) show a decrease in condom use and a drop in pregnancy prevention guidance in public schools, with the North, Northeast and Midwest regions having the worst performance for these indicators.[4] The highest frequency of female adolescents and young adults becoming mothers occurs among those with lower education and income, less access to public services, and in situations of greater social vulnerability.[9] The Northeast region has the second highest number of babies born alive to adolescent mothers, with Piauí being among the three states in the region with the highest proportion in 2015.[10]

Research addressing adolescent sexual initiation, its determinants and the sociodemographic context in which they find themselves can be of great use in informing public health policies focusing more specifically on the problems revealed. Based on the hypothesis that sociodemographic context and characteristics of social interaction can influence sexual initiation, the objective of this study was to analyze the prevalence of sexual initiation and associated factors among adolescent school students in the state of Piauí.

Study contributions	
Main results	Prevalence of sexual initiation was 24.2%, and was associated with being male, being 15 years old or more, living with one's mother, working, attending a public school, practicing bullying, as well as use of alcohol, cigarettes and illicit drugs.
Implications for services	The findings highlight the need for a multifactorial approach which, besides strengthening existing public policies, needs to target this audience, with emphasis on promoting education on sexuality and reproductive health.
Perspectives	Improving sexuality education prevention and promotion programs will be a good strategy for guiding adolescents, right from early school grades, to make better choices and to have responsible attitudes regarding sexual behaviors.

METHODS

This was a cross-sectional study using secondary date from the 2015 PeNSE Survey relating to public and private schools in Piauí.

Piauí is located in the mid-north part of Northeast Brazil. It has 224 municipalities distributed over an area of 251,611km^2. According to the 2010 Census, it had a population of 3,118,360 inhabitants.[11] In 2014, it had 480,388 young people aged 10 to 17 years living in urban and rural areas. In 2015, the year in which the PeNSE Survey was conducted, there were 506,726 students enrolled in elementary education.[11]

The sample size calculation took into consideration all students enrolled in the 9th grade of regular elementary education (day shift), attending schools with more than 15 students, while excluding those attending night shift classes. The calculation was based on 50% prevalence, estimated maximum error of 3% and 95% confidence intervals (95%CI). In the state of Piauí, 142 schools were analyzed. Data collection was performed from April 8 to September 30, 2015. The questionnaire was administered using smartphones and was only answered by students present at school on the day of data collection, thus enabling the adolescents themselves to record their answers. The PeNSE Survey database (http://www.ibge.gov.br) was accessed on May 12, 2021. All the variables were obtained from the website of the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* – IBGE) (https://biblioteca.ibge.gov.br/visualizacao/instrumentos_de_coleta/doc4595.pdf).

The dependent variable was adolescent sexual initiation, estimated based on the following question: *Have you ever had sexual intercourse?* (yes; no).

The independent variables were as follows:

a) Sociodemographic
   - sex (female; male);
   - age group (in years: 13 and 14; 15 or over);
   - race/skin color (White; Black; Asian; mixed race; Indigenous);
   - living with mother (yes; no);
   - living with father (yes; no);
   - maternal schooling (no schooling; elementary education; high school education; higher education);
   - type of school (public; private);
   - type of municipality in which the school is located (capital; non-capital);
   - internet access (yes; no);
   - number of people in the household (living alone; 2-5; 6-9; 10 or more);
   - working (yes; no).

b) Guidance received at school
   - guidance on preventing pregnancy (yes; no);
   - guidance about AIDS/STI (yes; no);
   - guidance on how to get free condoms (yes; no).

c) Health risk behaviors
   - alcohol use (at some point: yes; no);
   - cigarette smoking (at some point: yes; no);
   - illicit drug use (at some point: yes; no).

d) Aggressive behavior and history of violence
   - involvement in fights (last 30 days: yes; no);
   - family aggression (last 30 days: yes; no);
   - sexual violence (at some point: yes; no).

e) Mental health and bullying
   - difficulty in sleeping (last 12 months: yes; no);
   - feeling of loneliness (last 12 months: yes; no);
   - suffers bullying (last 30 days: yes; no);
   - practices bullying (last 30 days: yes; no).

f) Health services
   - health service use (last 12 months: yes; no);
   - knows about HPV vaccination (yes; no);
   - vaccinated against HPV (yes; no).

g) Body self-image
   - satisfaction regarding own body (satisfied; indifferent; dissatisfied);
   - perception of own body (thin; normal; fat).

The data were analyzed by means of descriptive statistics, with absolute and relative frequencies,

using the Statistical Package for the Social Sciences, version 20.0. In order to test association between sexual initiation and the independent variables, bivariate analysis was performed using Pearson's chi-square test and calculating the crude prevalence ratios (PR) and 95%CIs. Multivariable analysis was obtained by Poisson regression with robust variance, using as reference categories those at lower risk for sexual initiation. Adjusted PRs and 95%CIs were calculated. All variables with a p-value < 0.20 in the bivariate analysis were included in the Multivariable model.

Based on previous studies,[4,12] a hierarchical model (Figure 1) was used for the analysis of factors associated with sexual initiation. The model was organized into three blocks (according to the relationship of the variables with the outcome), enabling adjustment of confounding factors. The variables in the first block (distal) were composed of sociodemographic characteristics and guidance received at school. In turn, the second block (intermediate) considered characteristics related to mental health, bullying and health services. The third block (proximal) included variables on health risk behaviors, history of violence, body self-image and aggressive behavior. The hierarchical model followed the distal-proximal direction, with variables being excluded according

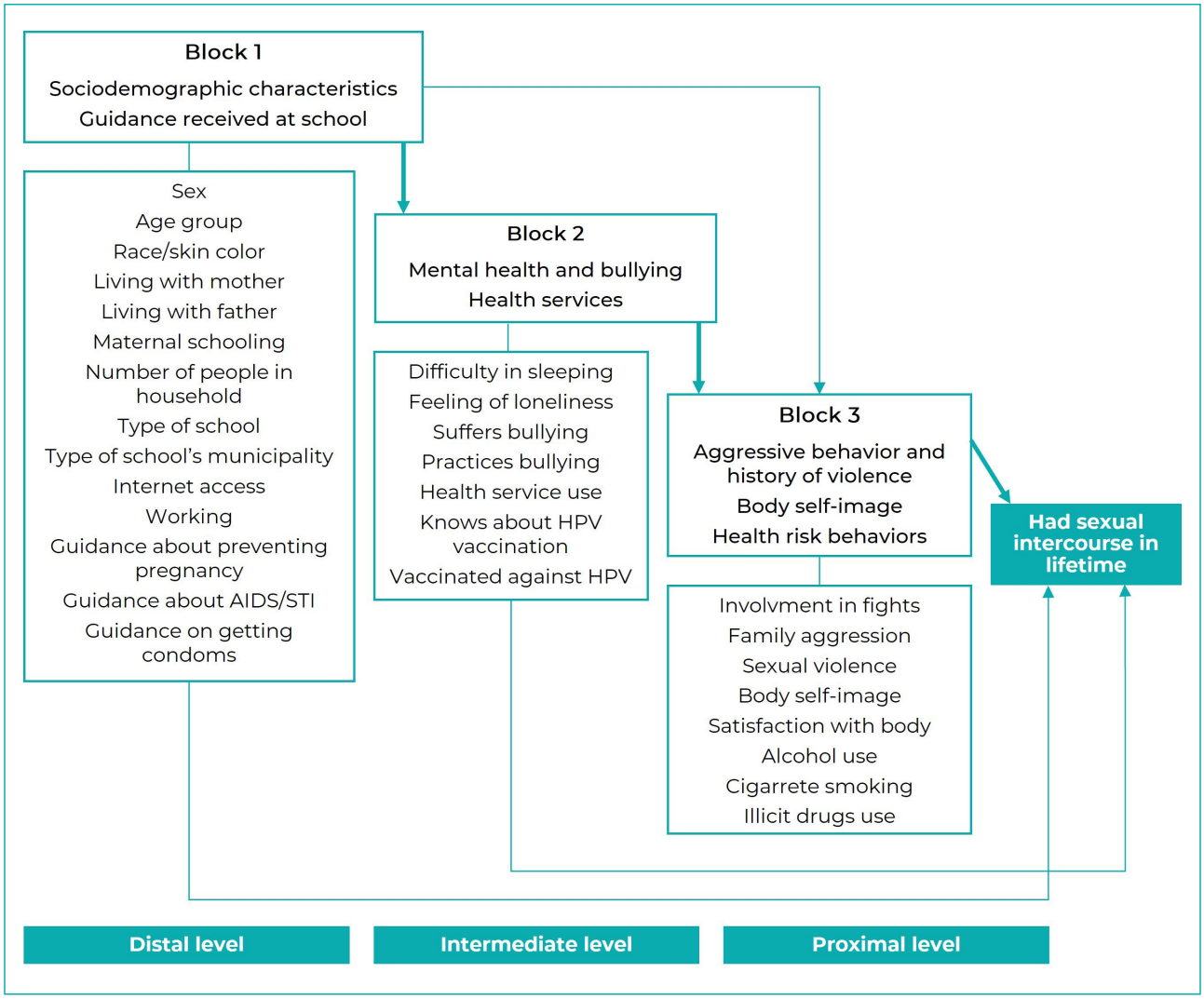

Figure 1 – Hierarchical model of factors associated with sexual initiation in adolescent school students

to the backward elimination method. Initially, the variables from the first block were included. Those with a p-value ≤ 0.05 were kept in the model (Model 1). The second block variables were then included. Those with a p-value ≤ 0.05 were kept in the model, adjusted to the previous level (Model 2). The same procedure was performed for the third block. In the final model (Model 3), variables with p-values < 0.05 were considered to be associated with the outcome. Since this was a complex sample, sample weighting was used in the analyses.

The PeNSE Survey project was approved by the National Research Ethics Council (Opinion No. 1.006.467, dated March 30, 2015).

RESULTS

A total of 3,872 adolescents were interviewed and, of these, 3,836 answered the question about sexual initiation. Of the total, there was predominance of female adolescents (53.0%), adolescents between 13 and 14 years old (66.6%) and those of mixed race (56.5%). Most attended public schools (79.5%), lived with their mother (88.3%) and/or father (62.9%) and did not work (92.1%).

Sexual initiation was found to have occurred for 24.2% (n = 936) of the adolescents, 46.4% of whom reported age at first intercourse as being 13 or younger. Table 1 shows the crude prevalence ratios, indicating that prevalence of sexual initiation was highest among male adolescents (PR = 2.42; 95%CI 2.04;2.65). In addition, being 15 years old or above (PR = 2.76; 95%CI 2.33;2.98) increased prevalence of sexual intercourse. Prevalence of having had sexual intercourse was lower among those who lived with their mother (PR = 0.65; 95%CI 0.54;0.72) or father (PR = 0.75; 95%CI 0.62;0.94). In turn, prevalence was higher among adolescents who were children of mothers who had no schooling (PR = 1.52; 95%CI 1.20;1.96) when compared to those with mothers who had higher education qualifications. Prevalence of sexual intercourse was higher among those who attended public schools (PR = 1.62; 95%CI 1.53;1.90) and among those who worked (PR = 2.21; 95%CI 1.90;2.56).

Table 2 shows that sexual activity was less prevalent among adolescents who had been vaccinated against HPV (PR = 0.57; 95%CI 0.36;0.81). Regarding health risk behaviors, association was found with alcohol use (PR = 3.18; 95%CI 2.68;3.59), cigarette smoking (PR = 2.97; 95%CI 2.60;3.27) and illicit drug use (PR = 3.27; 95%CI 2.95;3.56).

Most reported no involvement in fights (95.7%), no family aggression (88.7%), no bullying (84.9%) and no sexual violence (96.7%). Prevalence of sexual intercourse was higher both in the case of adolescents who had been bullied (PR = 1.21; 95%CI 1.10;1.39) and in the case of those who had practiced bullying (PR = 1.69; 95%CI 1.51;1.98). Higher prevalence of sexual intercourse was also found among those who engaged in fighting (PR = 2.45; 95%CI 2.09;2.82), those who experienced family aggression (PR = 1.58; 95%CI 1.33;1.86) and those with self-perception of their body as being normal (PR = 1.41; 95%CI 1.12;1.85) (Table 3).

The results of the hierarchical analysis are shown in Table 4. At model 1 being male (PR = 2.18; 95%CI 1.90;2.47), being 15 years or older (PR = 2.49; 95%CI 2.18;2.76), living with mother (PR = 0.68; 95%CI 0.54;0.82), attending a public school (PR = 1.39; 95%CI 1.09;1.75), and working (PR = 1.82; 95%CI 1.55;2.10) were associated with sexual initiation. At model 2 bullying (PR = 1.50; 95%CI 1.31;1.72) was also associated. At model 3 alcohol consumption (PR = 2.35; 95%CI 2.09;2.64), cigarette smoking (PR = 1.46; 95%CI 1.22;1.70), and illicit drug use (PR = 1.40; 95%CI 1.15;1.66) were behaviors associated with sexual initiation.

DISCUSSION

The data showed that prevalence of sexual initiation was reported by almost a quarter of the adolescents, with more than half of them having started their sex lives at between 14 and 17 years old. Being male, being 15 years old or over, living with one's mother, working, attending a public school, practicing bullying, as well as use of alcohol, cigarettes and illicit drugs were associated with

Table 1 – Crude association of sociodemographic variables with sexual initiation in adolescent school students, Piauí, Brazil, 2015

Variables	Total		Already had sexual intercourse? Yes		PR[a]	95%CI[b]	p-value[c]
	n	%	n	%			
Sex (n = 3,872)							
Male	1,820	47.0	623	37.1	2.42	2.04;2.65	< 0.001
Female	2,052	53.0	307	15.6	1.00		
Age group (in years) (n = 3,872)[d]							
13 and 14	2,577	66.6	396	15.4	1.00		< 0.001
15 or over	1,295	33.4	540	41.7	2.76	2.33;2.98	
Race/skin color (n = 3,867)							
White	949	24.6	212	23.8	1.00		0.242
Black	503	13.0	154	31.8	1.38	0.98;1.57	
Asian	133	3.4	32	26.9	1.07	0.76;1.52	
Mixed race	2,184	56.5	507	24.8	1.04	0.90;1.23	
Indigenous	98	2.5	24	29.7	1.11	0.73;1.65	
Living with mother (n = 3,869)							
Yes	3,417	88.3	771	24.0	0.65	0.54;0.72	< 0.001
No	452	11.7	158	38.5	1.00		
Living with father (n = 3,865)							
Yes	2,431	62.9	524	21.6	0.75	0.62;0.94	0.035
No	1,434	37.1	403	28.1	1.00		
Maternal schooling (n = 2,940)							
No schooling	279	9.5	82	30.9	1.52	1.20;1.96	0.001
Elementary education	1,138	38.7	317	28.2	1.42	1.27;1.70	
High school education	876	29.8	189	22.0	1.10	0.91;1.39	
Higher education	647	22.0	127	22.0	1.00		
Type of municipality (n = 3,872)							
Capital	2,008	51.9	424	21.8	0.78	0.59;1.15	0.284
Non-capital	1,864	48.1	506	27.0	1.00		
Type of school (n = 3,872)							
Public	3,077	79.5	801	27.3	1.62	1.53;1.90	< 0.001
Private	795	20.5	129	14.2	1.00		
Internet access (n = 3,863)							
Yes	2,448	63.4	585	25.6	0.98	0.82;1.12	0.916
No	1,415	36.6	345	25.8	1.00		

To be continue

Continuation

Table 1 – Crude association of sociodemographic variables with sexual initiation in adolescent school students, Piauí, Brazil, 2015

Variables	Total		Already had sexual intercourse? Yes		PR[a]	95%CI[b]	p-value[c]
	n	%	n	%			
Number of people in household (n = 3,869)							
Living alone	7	0.2	3	23.1	1.41	0.89;2.16	0.493
2-5	2,974	76.9	711	25.6	1.00		
6-9	844	21.8	200	24.9	0.99	0.85;1.15	
10 or more	44	1.1	15	36.4	1.78	0.76;4.34	
Working (n = 3,866)							
Yes	305	7.9	148	47.6	2.21	1.90;2.56	< 0.001
No	3,561	92.1	782	23.6	1.00		

a) PR: Crude prevalence ratio; b) 95%CI: 95% confidence interval; c) P-value: Chi-square test; d) Sexual initiation n = 3.836.

Table 2 – Crude association of variables regarding guidance received at school, health service use and risk behavior with sexual initiation in adolescent school students, Piauí, Brazil, 2015

Variables	Total		Already had sexual intercourse? Yes		PR[a]	95%CI[b]	p-value[c]
	n	%	n	%			
Guidance about pregnancy (n = 3,615)							
Yes	2,915	80.6	696	25.6	0.88	0.75;1.04	0.361
No	700	19.4	181	27.5	1.00		
Guidance about AIDS/STI[d] (n = 3,684)							
Yes	3,284	89.1	787	25.6	0.89	0.77;1.05	0.498
No	400	10.9	108	27.2	1.00		
Guidance about condoms (n = 3,559)							
Yes	2,381	66.9	654	28.8	1.35	0.98;1.70	0.130
No	1,178	33.1	236	21.0	1.00		
Health service use (n = 3,801)							
Yes	2,169	57.1	513	25.5	0.97	0.86;1.15	0.885
No	1,632	42.9	399	25.3	1.00		
Knows about HPV[e] vaccination (n = 3,795)							
Yes	3,402	89.6	787	24.5	0.74	0.63;1.07	0.215
No	393	10.4	124	32.6	1.00		

To be continue

Continuation

Table 2 – Crude association of variables regarding guidance received at school, health service use and risk behavior with sexual initiation in adolescent school students, Piauí, Brazil, 2015

Variables	Total		Already had sexual intercourse? Yes		PR[a]	95%CI[b]	p-value[c]
	n	%	n	%			
Vaccinated against HPV[e] (n = 2,032)							
Yes	1,400	68.9	168	11.4	0.57	0.36;0.81	< 0.001
No	632	31.1	134	25.8	1.00		
Alcohol consumption (n = 3,855)							
Yes	1,677	43.5	660	40.9	3.18	2.68;3.59	< 0.001
No	2,178	56.5	269	14.3	1.00		
Cigarette smoking (n = 3,857)							
Yes	517	13.4	292	59.0	2.97	2.60;3.27	< 0.001
No	3,340	86.6	636	20.8	1.00		
Drug use (n = 3,852)							
Yes	147	3.8	107	73.3	3.27	2.95;3.56	< 0.001
No	3,705	96.2	821	24.1	1.00		

a) PR: Crude prevalence ratio; b) 95%CI: 95% confidence interval; c) P-value: Chi-square test, d) Acquired Immunodeficiency Syndrome/ Sexually Transmitted Infections; e) HPV: Human Papillomavirus.

Table 3 – Crude association of variables regarding aggressive behavior, history of violence, mental health, bullying and self-image with sexual initiation of adolescent school students, Piauí, Brazil, 2015

Variables	Total		Already had sexual intercourse? Yes		PR[a]	95%CI[b]	p-value[c]
	n	%	n	%			
Involvement in fights (n = 3,827)							
Yes	166	4.3	92	57.7	2.45	2.09;2.82	< 0.001
No	3,661	95.7	829	24.2	1.00		
Family aggression (n = 3,808)							
Yes	429	11.3	153	37.1	1.58	1.33;1.86	< 0.001
No	3,379	88.7	761	24.1	1.00		
Sexual violence (n = 3,825)							
Yes	126	3.3	64	53.5	3.25	2.51;4.93	0.361
No	3,699	96.7	855	24.6	1.00		
Difficulty in sleeping (n = 3,845)							
Yes	2,293	59.6	573	26.3	1.09	0.97;1.23	0.328
No	1,552	40.4	354	24.7	1.00		

To be continue

Continuation

Table 3 – Crude association of variables regarding aggressive behavior, history of violence, mental health, bullying and self-image with sexual initiation of adolescent school students, Piauí, Brazil, 2015

Variables	Total		Already had sexual intercourse? Yes		PR[a]	95%CI[b]	p-value[c]
	n	%	n	%			
Loneliness (n = 3,847)							
Yes	2,381	61.9	585	25.7	1.04	0.93;1.17	0.932
No	1,466	38.1	345	25.6	1.00		
Suffers bullying (n = 3,757)							
Yes	1,628	43.3	436	28.2	1.21	1.10;1.39	0.039
No	2,129	56.7	467	23.8	1.00		
Practices bullying (n = 3,843)							
Yes	581	15.1	214	37.2	1.69	1.51;1.98	< 0.001
No	3,262	84.9	710	23.7	1.00		
Perception of body (n = 3,800)							
Thin	2,268	59.7	214	22.2	1.06	0.81;1.39	0.001
Normal	1,010	26.6	590	27.6	1.41	1.12;1.85	
Fat	522	13.7	108	21.2	1.00		
Satisfaction with body (n = 3,787)							
Dissatisfied	2,930	77.4	729	25.9	1.02	0.84;1.26	0.253
Indifferent	325	8.6	66	25.9	1.26	1.05;1.51	
Satisfied	532	14.0	113	22.0	1.00		

a) PR: Crude prevalence ratio; b) 95%CI: 95% confidence interval; c) P-value: Chi-square test.

Table 4 – Hierarchical analysis of factors associated with sexual initiation of adolescents in Piauí, Brazil, 2015

Variables	Model 1		Model 2		Model 3	
	PR[a]	95%CI[b]	PR[a]	95%CI[b]	PR[a]	95%CI[b]
Sex						
Male	2.18	1.90;2.47[c]				
Female	1.00					
Age group (in years)						
13 and 14	1.00					
15 or over	2.49	2.18;2.76[c]				

To be continue

Continuation

Table 4 – Hierarchical analysis of factors associated with sexual initiation of adolescents in Piauí, Brazil, 2015

Variables	Model 1		Model 2		Model 3	
	PR[a]	95%CI[b]	PR[a]	95%CI[b]	PR[a]	95%CI[b]
Living with mother						
Yes	0.68	0.54;0.82[c]				
No	1.00					
Living with father						
Yes	0.73	0.58;1.09				
No	1.00					
Maternal schooling						
No schooling	0.92	0.75;1.25				
Elementary education	1.06	0.84;1.28				
High school education	0.91	0.75;1.10				
Higher education	1.00					
Type of school						
Public	1.39	1.09;1.75[c]				
Private	1.00					
Working						
Yes	1.82	1.55;2.10[c]				
No	1.00					
Suffers bullying						
Yes			1.15	0.92;1.39		
No			1.00			
Practices bullying						
Yes			1.50	1.31;1.72[c]		
No			1.00			
Vaccinated against HPV[d]						
Yes			0.73	0.60;1.11		
No			1.00			
Involvement in fights						
Yes					1.10	0.87;1.38
No					1.00	
Family aggression						
Yes					1.06	0.84;1.35
No					1.00	

To be continue

Continuation

Table 4 – Hierarchical analysis of factors associated with sexual initiation of adolescents in Piauí, Brazil, 2015

Variables	Model 1		Model 2		Model 3	
	PR[a]	95%CI[b]	PR[a]	95%CI[b]	PR[a]	95%CI[b]
Body self-image						
Thin					1.15	0.91;1.52
Normal					0.94	0.85;1.20
Fat					1.00	
Alcohol consumption						
Yes					2.35	2.09;2.64[c]
No					1.00	
Cigarette smoking						
Yes					1.46	1.22;1.70[c]
No					1.00	
Illicit drugs use						
Yes					1.40	1.15;1.66[c]
No					1.00	

Legend: Model 1 = Distal; Model 2 = Intermediate (adjusted by the model 1 variables); Model 3 = Proximal (adjusted by the model 2 variables). a) PR: Adjusted prevalence ratio; b) 95%CI: 95% confidence interval; c) Variables with p-value < 0.05; d) HPV: Human Papillomavirus.

sexual initiation. These findings suggest that several aspects related to the living conditions and family issues of adolescents should receive attention, as they may influence their sex lives and health risk factors.

Prevalence of sexual initiation in Piauí was lower than that found in the national sample of the 2012 PeNSE Survey (28.7%),[13] but higher than that found in other studies.[6,7] This discrepancy in prevalence can be explained by complex interactions between social context, religion, education status, gender norms and even diverse methodological approaches.[2,14] Different understandings of what "sexual intercourse" means may result in the frequencies found underestimated or overestimated, and may even influence an adolescent's understanding of whether or not oral sex is included in its definition.[2] In addition, cultural patterns common in many regions explain the difference between the sexes, encouraging males to engage in sexual activities and punishing females for engaging in them.[14,15]

As for the age of sexual initiation in Piauí, two-fifths of the adolescents reported having started their sex lives under the age of thirteen. In 2009, more than half (56.8%) of school adolescents in Brazil who reported having had sexual intercourse were 13 years old or younger.[16] Another national study, conducted in 2014, found that mean age at first sexual intercourse was 12.4 years.[7] Despite being controversial, and despite different cutoff points being used, for some authors having sex under the age of 15 can be considered early and very early when it occurs before the age of 14.[2,5] Between 1996-1998, young people in Finland, Scotland, France, Poland and the United States, for whom early sexual debut was defined as being under 16, showed a positive relationship between early sex and substance use (alcohol and tobacco) in all countries.[17]

Discussion regarding the age at which sexual initiation occurs is also related to physiological and psychological factors present during adolescence and their repercussions in adulthood.[2] Initiation before age 14 may be associated with multiple partners, STI transmission, sexual violence and physical violence and, in the case of girls under 14 years old and their physiological maturation, they are considered too young to have sexual intercourse.[5] Furthermore, almost 40% of women who started their sex lives at age 10 contracted an STI in early adulthood.[18] The purpose of gaining understanding of these aspects is to seek strategies capable of supporting adequate sexual and reproductive health. This discussion serves not only for adolescents who have already started their sex lives, but also to encourage those who have not yet started to have responsible attitudes towards sexual health.

In our study, sexual initiation was associated with living with one's mother. Known to be a protective factor regarding sexual initiation, the quality of the relationship with parents, including their presence and supervision, can positively influence the development of their children's sexuality education.[19] In 2016, a study in the Netherlands found that having quality relationships with mothers and/or fathers – especially in the case of mother-daughter relationships – could decrease the propensity to starting one's sex life early.[20] Moreover, the higher the level of maternal schooling, the lower the likelihood of adolescents starting their sex life early.[5] Family support is fundamental for the development of adolescents, as it encourages autonomy, cooperation and the organization of family rules,[7,12] and parents can play a significant role in promoting healthy sexual behaviors.[20]

Higher prevalence of sexual initiation was found among adolescents attending public schools. This aspect was also found previously by the 2012 PeNSE Survey.[13] When comparing sexuality education activities for students attending private and public schools, the situation is still unfavorable for both groups regarding guidance about STIs, condom use and unplanned pregnancy. However, vulnerability of students attending public schools is greater, due to lack of educational material and teachers being unprepared.[4,21] As a gateway to information on sexual and reproductive health, schools play an important role in young people's sexuality education. However, just as in the family environment, teachers have difficulties when discussing the subject, and this is a barrier that still needs to be overcome.[2,5]

Although there may be a discrepancy between having knowledge and not protecting oneself, it has been shown that not receiving sexual and reproductive health guidance at school has been related to greater likelihood of sexual initiation and unprotected sex.[4,13] Adolescents who reported attending school were less likely to be sexually active, as well as using condoms more and having fewer multiple and simultaneous partners.[5] In the Brazilian context, several factors have been associated with adolescents not using condoms, in particular not having received guidance on pregnancy prevention or guidance on AIDS/STI prevention at school, not having used health services or not having sought help from health professionals.[22] Furthermore, it is known that individuals who start smoking at a relatively early age tend to have unprotected sex under the influence of alcohol or drugs, demonstrating the intersection of risk factors.[5]

The literature has also shown association between sexual activity and paid work outside the home.[2,5,7] Adolescents who work for long periods during the school year are more likely to experience family-forming behaviors earlier than young people who work less or never work.[5] The likelihood of early sexual initiation among adolescents increases when their mothers have low levels of schooling, work and are heads of families.[13] The most relevant cause of these behaviors is lack of financial resources, which can lead to high-risk behaviors literally in order to survive, in particular the sexual exploitation of girls.[23]

As found in this study, practicing bullying is a factor associated with sexual initiation. Adolescents with various types of psychosocial disorders may be more likely to engage in sexual activities to relieve emotional distress.[14] It is common for males to be more likely to perpetrate bullying than females and that behind young perpetrators of bullying there is a context of other risk factors that lead them to play the role of the bully, especially physical and sexual abuse in childhood, considered to be the most consistent indicators underlying the perpetuation of violence by youths.[24] As such, efforts to reduce bullying must also address sexual harassment and social links with adults, whereby parents and teachers can be protective factors directly.[25]

In this study, use of substances such as alcohol, drugs and tobacco smoking was associated with sexual initiation. Evidence of this has already been shown in the literature.[7,16] Alcohol intake or experimentation at some point by adolescents is increasingly frequent, and this can generate adverse consequences, both through increased vulnerability to excessive consumption and increased predisposition to behavioral disorders, including risky sexual behavior with multiple partners.[26] However, many adolescents may experiment with alcoholic beverages and not develop binge drinking behavior. This pattern was not assessed by this study, but has considerable association with early sexual initiation,[16] as well as with compulsive behaviors such as use of illicit drugs.[27]

There is consensus that alcohol can affect adolescents' critical judgment, reduce inhibition and interfere with decision making, favoring a greater number of partners, this being one of the explanations for its association with early sexual initiation.[16] Rates of alcohol use are higher among poorer and non-white high school students, with higher absenteeism due to use of alcohol, marijuana, as well as combinations of other substances.[27] Some adolescents believe that alcohol has the potential to enhance their sexual experiences and often use it jointly with illicit drugs.[28] Such joint use may be linked to the quest for more intense sensations, resulting in greater propensity to use substances and have multiple sexual partners to satisfy desires for exciting experiences.[29] Whether or not used with other substances, alcohol consumption can predict sexual initiation[16] and this, in turn, can induce alcohol consumption among adolescents.[30] Due to the cross-sectional nature of our study, however, a complete understanding of some of the associations found was not possible, and both simultaneity and precedence of one factor over another may occur.

It should be noted that this research has certain limitations. Firstly, the 2015 PeNSE questionnaire did not contain questions about adolescents' relationships with their peers and, given the importance of this variable for sexual behavior, it could alter the results presented here. Another aspect to be considered is that the data refer to adolescents who were at school at the time of the interview and that, in addition to those who were absent, the survey has no data on those who did not attend school, which may have interfered with the prevalence found. Moreover, all the answers refer to past events, and may present memory bias, which can result in the indicators being underestimated or overestimated. On the other hand, as the questionnaire was confidential, the answers were probably given with less inhibition. Finally, taking into account the cross-sectional nature of the study, the results presented should be interpreted with caution, due to the impossibility of establishing a relationship of temporality or causality.

Despite its limitations, the present study is the first in Piauí to assess a representative sample with regard to sexual initiation among adolescents. It also analyzed a large number of variables as factors that may be associated with sexual initiation. By contributing to the understanding of young people's sexual behavior and exploring the prevalence of sexual health parameters, the analysis of the data adds knowledge about risk and protection both

individual and social factors associated with sexual initiation. In this sense, it is possible to adopt a multifactorial approach which, in addition to strengthening existing public policies, can be targeted toward this audience, with emphasis on education about sexuality and reproduction. Furthermore, reinforcing the importance of family involvement, education about sexuality and reproduction at school, as well as health professionals and society, is a key point in promoting the sexual and reproductive health of adolescents.

AUTHOR CONTRIBUTIONS

Castro LC and Madeiro AP contributed to the study concept and design, analysis and interpretation of the results, drafting and critically reviewing the contents of the manuscript. Viana VAO and Rufino AC contributed to data interpretation, drafting and critically reviewing the contents of the manuscript. All the authors have approved the final version of the manuscript and are responsible for all aspects thereof, including the guarantee of its accuracy and integrity.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

ASSOCIATED ACADEMIC WORK

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