Adolescent pregnancy and completion of basic education: a study of young people in three state capital cities in Brazil

A gravidez na adolescência e a conclusão da educação básica: um estudo entre jovens do Brasil

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Abstract

This study evaluated the association between adolescent pregnancy and the completion of basic education, mediated by macrosocial indicators. A cross-sectional household survey was conducted with individuals between the ages of 18 and 24 in three Brazilian cities. For the purposes of this study, individuals between the ages of 20 and 24 were selected from this sample survey that included 4,634 people. A total of 29.6% of the girls declared that they had become pregnant prior to reaching the age of 20, while 21.4% of the boys stated that they had made a girl pregnant in adolescence. Girls from households with a per capita family income of US$70 or less and who became pregnant at least once during adolescence were more likely to have not completed basic education; whereas from households with a per capita family income of US$70 or less, with parents who separated before the adolescent reached the age of 20 and that had made a partner pregnant prior reaching the age of 20 were more likely to have not completed basic education. It is vital that the school system provides girls and boys with guidance on sexuality and contraception and encourages them to remain in education.

Adolescent Pregnancy; Gender Identity; Education

Introduction

The past few decades have seen changes in the transition from childhood to adulthood, with a prolonged youth phase, postponed parenthood and young people tending to remain in education for longer periods of time. Nevertheless, adolescent pregnancy remains a possibility in the trajectory of young people [1] and has been associated with poor academic performance and higher rates of school dropout. Adolescent pregnancy is also attributable to low social economic status, which may be aggravated when the pregnancy occurs in the absence of a formal union [2].

Many studies of the relationship between adolescent pregnancy and education levels have been published [2,3,4,5,6,7,8,9,10]. In Brazil, studies have shown that girl's education level is the strongest influencing factor and consistently associated with adolescent pregnancy [9]. In addition, most pregnant teenagers from the less privileged classes of society and poorer regions of the country drop out of school before completing their basic education [4]. The term *basic education* here refers to elementary and high school. These studies have also shown higher rates of illiteracy among 17 to 19 year old adolescent mothers and indicate that adolescent pregnancy is more likely among girls with lower levels of education [10].

The economic and social consequences of becoming pregnant before reaching the age of

20 vary according to culture and family structure [2,11]. Middle and upper class teenagers generally receive financial and material support, thereby reducing the impact of teenage parenthood [12] on the educational and professional future of the individual. Furthermore, while abortion is more common among middle and upper class teenagers, less privileged teenagers generally carry the pregnancy to term, often negatively affecting their education [13].

Education in Brazil is marked by student age/grade gaps; i.e., in many cases older children are mixed with younger children in the same class, especially in the lower grades. This is due to a number of factors such as school drop out, grade repetition, and children starting to attend school after the required age, which invariably result in further school dropouts. In addition to macrosocial determinants, studies indicate a relationship between family context and academic performance [14,15,16,17,18].

Despite the fact that access to education and the opportunity to remain in school are initially similar for both sexes, girls remain in education for longer than boys [19,20]. Gender inequalities become evident when factors such as the number of young girls who interrupt their education, repeat grades and fail to complete basic education, principally when a reproductive event occurs, are taken into consideration [8].

In measuring the relationship between school dropout rates and pregnancy before reaching the age of 20, Almeida et al. [8] reported that 36.4% of girls and 40.4% of boys abandoned their studies either during or following a pregnancy. Among adolescents from households with a per capita family income of one minimum salary or less, around 20% of girls and boys had already dropped out of school before the pregnancy occurred. In the case of the boys, the principal reason given for having left school was work-related, while the girls mentioned that the main motive was pregnancy and having to take care of the child.

Given the complexity of this phenomenon, investigating the effect of adolescent pregnancy on the completion of basic education is not an easy task; however, it is an important one.

This paper uses data obtained by the GRAVAD study – a multicenter study of young people, sexuality and reproduction in Brazil [21]. The objective of this paper is to report findings on the association between adolescent pregnancy and completion of basic education among the individuals interviewed, mediated by macro-social indicators.

Methodology

This cross-sectional study was performed in 2001 with young people from Porto Alegre (capital of the Rio Grande do Sul State), Rio de Janeiro (capital of the Rio de Janeiro State) and Salvador (capital of the Bahia State). The participants were between 18 and 24 years of age at the time of the study. It was decided to use a probabilistic sample stratified in three stages in order to guarantee representativeness of the general population in the targeted age-group. Calculations indicated a required sample size of 1,500 individuals for each city, based on estimated pregnancy rates among 18 and 19 year-old girls of 25.3% and 34.8% respectively, based on statistics from 1996 [22].

Geographical dispersion was guaranteed by the sampling design. The first step involved a randomized sample stratified by census area and grouped into five strata based on the mean income and education level of the head of the family. In the second step, 33 of the households in each census sector, previously identified as being eligible because they contained an individual aged between 18 and 24 years of age, were independently randomized, allowing for a possible loss rate of around 20%. In the third step, the person whose birthday occurred earliest in the calendar year was chosen from the eligible individuals in each selected household to participate in the study. In the case of identical birthdates, the individual whose name came first in the alphabet was selected for inclusion in the study.

Data was collected through face-to-face interviews using a previously tested questionnaire to obtain information on academic trajectories, employment and affective and sexual relationships. Young people studying or working in areas related to human sciences, who were approximately the same age as the participants in the study, were trained to conduct the interviews.

To guarantee the quality of the data collected, the questionnaires were reviewed by a team of supervisors. In addition, 20% of the questionnaires were randomly selected and tested by reasking specific questions using a telephone interview or by returning to the individual's home.

The database was constructed using the Epi Info software package, version 6.04b (Centers for Disease Control and Prevention, Atlanta, USA), using double data entry procedures. In view of the complexity of the sample design, the data was analyzed using the Stata software program, version 8 (Stata Corp., College Station, USA), which permitted the incorporation of sample design effects and the relative weight of each unit, thus obtaining reliable parameter estimates. Weight

was calculated based on the probability of the selection of the units in each step.

In constituting the study population, it was decided to redefine the age-group usually defined as adolescent [23,24] so as to permit the inclusion of any pregnancy that had occurred previously but that was sufficiently recent for the individual to remember the details relevant to the study. This study analyzed data from individuals between 20 and 24 years of age who were interviewed, irrespective of whether they had been pregnant or not. The fact that all these individuals had already passed from adolescence to adulthood and therefore were not able to experience any further reproductive episodes in adolescence, together with the fact that the participants should technically have already completed their basic education, were factors that were taken into account when defining the study population. An individual was considered to be outside the appropriate age-group for a particular school grade (age-grade gap) if he/she was over seven years of age when he/she started to attend elementary school.

The principal variables selected for the study were those relating to schooling: late starting age in attending elementary education (yes/no); completed basic education (yes/no); and at least one reported pregnancy in adolescence (defined as having occurred before reaching the age of 20).

The covariables of interest were related to macrosocial and family characteristics: city of residence, per capita monthly family income, skin color/ethnic group (self-reported), mother's education level, number of siblings, whether the individual's parents were separated, participation in domestic chores in adolescence, and whether the individual worked in paid employment for more than three months prior to turning 20. All the covariables were dichotomized to perform multivariate analysis with the exception of city of residence.

The first step of the analysis procedures consisted of describing the selected variables using the distribution of simple frequencies and cross-analysis in order to characterize the study population. The differences in proportions were tested for statistical significance using Pearson's chi-square test with Rao and Scott's second order correction at the 5% significance level. However, it was decided to present the 95% confidence intervals (95%CI).

Non-conditional logistic regression models were constructed separately for boys and girls for the variable completed basic education (yes/no) which, as mentioned above, included all levels of education except university.

For the purpose of this analysis, non-completion of basic education was defined as a dependent variable. The covariables shown by the bivariate analysis as having an association with the completion of basic education (with p-values ≤ 0.20) were selected for inclusion in the regression models.

The strategy used for including the variables in the models was hierarchical and considered four blocks of covariables: in the first hierarchical level, the covariables representing the macrosocial factors were introduced; in the following step, the remaining variables associated with failure to complete basic education, after simultaneous adjustment (with p-levels < 0.05), were maintained; the same procedure was applied to the microsocial variables relating to family context, paid employment and finally the occurrence of pregnancy before reaching the age of 20. These variables were selected because they were considered most relevant by the young people themselves.

The study was conducted in compliance with all applicable ethical procedures and the protocol was approved by the Internal Review Boards of the respective universities involved in this work [the Federal University of Bahia (Universidade Federal da Bahia – UFBA), the State University of Rio de Janeiro (Universidade do Estado do Rio de Janeiro – UERJ), and the Federal University of Rio Grande do Sul (Universidade Federal do Rio Grande do Sul – UFRGS)]. An informed consent form was read by each participant prior to the questionnaire and signed following its completion. In addition, the privacy of the individual was guaranteed by ensuring that the interview took place without the presence of any third parties over four years of age. Furthermore, the individual participated in the process on a voluntary basis and the participant's right to refuse to answer any question or to stop the interview at any stage was respected.

Results

Of 4,634 individuals interviewed under the GRAVAD study, 3,042 (65.6%) young people who were between the ages of 20 and 24 at the time of the interview were included in the present study. Of this total, 53.2% were male and 46.8% female. Overall, 29.6% of the girls reported that they had been pregnant and 21.4% of the boys mentioned that they had made a girl pregnant before reaching the age of 20. A total of 8.8% of the girls and 15.4% of the boys reported that they were over seven years of age when they began to attend school (i.e., there was already an age/grade gap

when they started school). Approximately 81% of the girls and 75% of the boys completed elementary school. In contrast, only 61.2% of the girls and 50.6% of the boys reported having completed high school (data not shown).

A total of 14.3% of the girls who became pregnant during adolescence were over seven years of age when they started school. This percentage was almost twice that found in the girls who had not become pregnant (Table 1). With respect to the girls who had not become pregnant during adolescence, different results were found by city. The age/grade gap for girls was found to be greatest in Salvador and in this city the percentage of girls with an age/grade gap was twice as high in girls who had become pregnant in adolescence (Table 1). This age/grade gap was more common in girls from households with lower per capita

Table 1

Distribution of girls between the ages of 20 and 24 that reported at least one pregnancy prior to reaching the age of 20, educational indicators and selected social and family variables.

Covariables	Pregnancy prior to reaching the age of 20				No pregnancy prior to reaching the age of 20			
	Began elementary school late							
	n	%	95%CI	p-value	n	%	95%CI	p-value
Overall proportion	439	14.3	10.4-19.5		1,038	6.7	4.9-9.1	*
City				0.0000				0.0001
Porto Alegre	137	4.0	1.7-9.2		324	1.4	0.5-3.7	
Rio de Janeiro	125	6.1	2.8-12.6		324	4.8	2.8-7.8	
Salvador	177	29.3	22.6-37.0		390	12.5	8.4-18.1	
Per capita monthly family income **				0.0004				0.0005
≤ US$70.00	267	19.7	14.2-26.7		242	12.6	8.2-19.0	
> US$70.00	172	6.2	3.1-12.0		796	4.3	2.7-6.7	
Level of mother's education				0.0136				0.0049
Did not complete Elementary School	260	17.4	12.0-24.6		323	11.7	7.9-17.1	
Completed Elementary School	75	5.5	1.9-14.6		168	6.8	2.7-16.2	
Completed High School/University	77	7.0	2.9-6.1		527	2.8	1.3-6.1	
Race/Ethnicity				0.3167				0.0327
White	173	12.0	6.5-21.2		559	4.4	2.6-7.3	
Mixed race	101	11.0	5.4-21.1		208	11.3	6.1-19.9	
Black	128	17.4	11.2-25.9		193	9.0	5.4-14.7	
Brazilian Indian	29	24.6	10.4-47.9		51	2.8	0.6-11.2	
Number of siblings				0.0669				0.1328
None or 1	71	4.6	1.0-18.0		338	3.6	1.4-9.2	
2 or more	367	15.9	11.4-21.7		700	7.9	5.6-11.0	
Parents separated				0.8459				0.7596
Still together or separated after child reached the age of 20	245	13.9	9.2-20.6		747	6.5	4.7-9.0	
Separated prior to child reaching the age of 20	190	14.7	9.5-22.1		288	7.2	4.0-12.7	
Involvement in domestic chores when aged 15-18				0.1079				0.5618
Helped or had no obligation at all	198	11.4	7.1-17.9		731	6.3	4.3-9.2	
Was responsible for the household chores or divided responsibility equally	235	17.1	11.9-23.9		304	7.4	4.7-11.6	
Paid employment for more than 3 months prior to reaching the age of 20				0.9658				0.2938
Yes	293	14.2	9.3-21.1		584	5.8	3.7-8.9	
No	144	14.1	8.8-21.6		451	8.0	5.2-12.0	

(continues)

Table 1 (continued)

Covariables	Pregnancy prior to reaching the age of 20				No pregnancy prior to reaching the age of 20			
	Failed to complete basic education							
	n	%	95%CI	p-value	n	%	95%CI	p-value
Overall proportion	491	70.5	64.4-76.0		1,114	25.6	21.6-30.0	*
City				0.3881				0.0715
Porto Alegre	142	75.7	66.5-83.1		329	18.0	12.3-25.6	
Rio de Janeiro	152	67.4	56.8-76.5		361	23.9	17.8-31.2	
Salvador	197	73.2	64.9-80.1		424	31.8	24.9-39.6	
Per capita monthly family income **				0.0000				0.0000
≤ US$70.00	305	86.1	80.4-90.2		269	48.1	39.8-56.4	
> US$70.00	186	46.8	37.0-56.7		845	16.0	12.5-20.3	
Level of mother's education				0.0000				0.0000
Did not complete Elementary School	290	81.4	73.9-87.1		358	41.6	34.2-49.5	
Completed Elementary School	80	59.6	46.0-71.8		181	22.8	15.5-32.2	
Completed High School/University	82	33.4	21.9-47.3		547	7.3	4.8-11.0	
Race/Ethnicity				0.0031				0.0000
White	188	62.1	50.9-72.1		583	15.0	10.9-20.3	
Mixed race	117	61.3	48.7-72.6		233	32.0	24.1-41.1	
Black	147	85.1	75.0-91.5		214	39.9	30.5-50.2	
Brazilian Indian	31	81.1	60.5-92.3		52	23.8	11.6-42.5	
Number of siblings				0.0009				0.0000
None or 1	78	49.6	36.2-63.1		356	12.3	7.8-18.9	
2 or more	411	73.9	67.5-79.5		758	30.5	25.7-35.7	
Parents separated				0.1977				0.5502
Still together or separated after child reached the age of 20	272	66.8	58.1-74.5		789	24.8	20.5-29.5	
Separated prior to child reaching the age of 20	215	75.1	65.5-82.8		322	27.0	20.6-34.4	
Involvement in domestic chores when aged 15-18				0.0030				0.0098
Helped or had no obligation at all	218	61.0	52.6-68.9		777	21.2	16.9-26.2	
Was responsible for the household chores or divided responsibility equally	267	78.0	69.5-84.7		334	34.3	26.1-43.6	
Paid employment for more than 3 months prior to reaching the age of 20				0.4916				0.8677
Yes	352	68.9	60.5-76.2		628	25.9	21.1-31.3	
No	164	73.2	63.3-81.2		483	25.2	19.5-32.0	

* $p < 0.05$;

** Categories defined based on the prevailing nationwide minimum wage (US$70.00).

Source: GRAVAD study, 2002. Population: young people between the ages of 20 and 24 in Porto Alegre (Rio Grande do Sul State), Rio de Janeiro (Rio de Janeiro State), Salvador (Bahia State).

family income, irrespective of whether the girl had become pregnant in adolescence or not. Likewise, girls whose mothers had failed to complete elementary school were more likely to be outside the age-group for their school grade; However, in the group of girls who had become pregnant in adolescence, the likelihood of their mothers having failed to comlete elementary school was even greater (Table 1). Among the group of girls with an age/grade gap, no statistically significant differences in color/ethnicity were found between girls who had become pregnant in adolescence and girls that had not become pregnant. However, the proportion of an age/grade gap was greater among girls who had reported at least one pregnancy in adolescence, particularly in black girls. The same relationship was found with respect to the covariables whether their parents were

separated, participation in household chores in adolescence and whether they worked in paid employment for more than three months prior to reaching the age of 20. However, the proportion of an age/grade gap in girls with two or more siblings was approximately three times greater than in girls with only one sibling and twice as great compared to girls who did not become pregnant in adolescence (Table 1).

A total of 70.5% of the girls who reported at least one pregnancy in adolescence failed to complete basic education compared to 25.6% of the girls who had not become pregnant (Table 1). The proportion of girls that did not become pregnant in adolescence who failed to complete basic education was highest in Salvador; however, these differences between cities were cancelled out by the results related to the occurrence of pregnancy.

The effect of family income and mother's education level on completion of basic education was aggravated by pregnancy in adolescence (Table 1). The percentage of girls that did not complete basic education was higher among girls with two or more siblings and this disadvantage increased when the pregnancy occurred before the girl reached the age of 20. The fact that the adolescent's parents separated before the girl reached the age of 20 and the fact of having worked during adolescence did not affect school dropout rates within the groups. However, the proportion of non-completion of school in girls who became pregnant and whose parents were separated was greater than in girls who had not become pregnant in adolescence.

With respect to participation in household chores, in both groups (girls who became pregnant during adolescence and girls that did not), no significant differences in non-completion of school rates were found between the girls who only helped out around the house or had no obligations at all and those who were completely responsible for household chores (Table 1).

A total of 25.9% of the boys who made a girl pregnant during adolescence were over seven years of age when they began school, compared to 12.5% of boys who had no involvement in pregnancy during adolescence (Table 2). In the group of boys who had no involvement in pregnancy during adolescence, the proportion of an age-grade gap was highest in Salvador. However, in the group of boys involved in pregnancy, the proportion of an age-grade gap in boys in Salvador was similar to that found among boys in Rio de Janeiro. It should also be noted that the proportion of an age-grade gap is 20 times greater in boys from households with lower per capita family income compared to boys from households with with a higher per capita family income. This difference was considerably attenuated in the group of boys involved in pregnancy in adolescence. The mother's education level does not appear to have any effect on age-grade gap in boys; however, the proportion of an age-grade gap increases in boys involved in pregnancy in adolescence (Table 2). Having more siblings was found to be a disadvantage for boys with an age-grade gap irrespective of whether they made a girl pregnant in adolescence or not (Table 2).

With respect to the non-completion of basic education, the boys repeated the same pattern as the girls (Table 2); however, among the boys not involved in pregnancy, non-completion rates are generally twice those found among the girls across all levels of the analysis.

In girls, a strong crude association was found between non-completion of basic education and the mother having a low education level (OR = 8.30; 95%CI: 5.41-12.74), coming from a household with lower per capita family income (OR = 6.59; 95%CI: 4.60-9.45) and pregnancy in adolescence (OR = 7.16; 95%CI: 5.07-10.12). A weaker association was also found between non-completion of basic education and the following factors: self-reported skin color/ethnicity, number of siblings, the fact that parents had separated and participation in household chores (Table 3).

At the first level, coming from a household with low per capita family income and the girl's mother having a low level of education, were factors associated with non-completion of high school. At the second level, the covariables related to the family context – number of siblings, separated parents and participation in household chores – were found to have a statistically significant association and were therefore maintained in the model. No significant association was found between the covariable paid employment and non-completion of high school. At the fourth level, after adjusting the final model by including adolescent pregnancy, the covariables separated parents and participation in household chores were found to lose statistical significance. Once again, even after adjustment for the other variables, a strong association was found between adolescent pregnancy and the girl's mother having a low level of education and non-completion of basic education (Table 3).

A strong association was found between the failure of boys to complete basic education with the fact that boys came from a household with lower per capita family income (OR = 9.18; 95%CI: 5.98-14.12) and with the boy's mother having a low level of education (OR = 6.93; 95%CI: 5.00-9.63). Associations of lesser magnitude were also

Table 2

Distribution of boys between the ages of 20 and 24 that reported at least one pregnancy prior to reaching the age of 20, educational indicators and selected social and family variables.

Covariables	Pregnancy prior to reaching the age of 20				No pregnancy prior to reaching the age of 20			
	Began elementary school late							
	n	%	95%CI	p-value	n	%	95%CI	p-value
Overall proportion	247	25.9	17.6-36.4		1,029	12.5	9.4-16.5	*
City				0.1490				0.0000
Porto Alegre	81	7.8	2.7-20.3		385	2.7	1.4-5.4	
Rio de Janeiro	78	27.5	15.2-44.6		316	9.6	6.4-14.1	
Salvador	88	30.3	19.7-43.5		328	24.1	16.9-33.1	
Per capita monthly family income **				0.0074				0.0002
≤ US$70.00	115	38.3	23.3-56.0		230	22.4	15.0-32.3	
> US$70.00	132	12.4	6.2-23.1		799	0.9	6.4-12.5	
Level of mother's education				0.5569				0.0000
Did not complete Elementary School	116	32.6	18.6-50.5		326	19.3	13.7-26.4	
Completed Elementary School	41	23.9	7.1-56.2		171	10.4	5.9-17.6	
Attended High School/University	73	18.4	6.3-43.0		487	4.5	2.6-7.7	
Race/Ethnicity				0.1579				0.0400
White	98	20.4	9.3-39.1		573	8.4	5.5-12.8	
Mixed Race	44	14.3	6.5-28.7		201	12.5	6.9-21.5	
Black	80	36.2	22.0-53.2		188	17.8	11.0-27.5	
Brazilian Indian	22	23.2	9.0-48.0		55	25.3	11.8-46.3	
Number of siblings				0.0732				0.0007
None or 1	59	11.9	4.1-30.0		337	5.3	2.9-9.5	
2 or more	188	29.1	19.6-40.8		692	15.7	11.7-20.8	
Parents separated				0.4860				0.3228
Still together or separated after child reached the age of 20	145	23.1	12.8-38.1		696	11.4	7.8-16.5	
Separated prior to child reaching the age of 20	100	29.7	17.8-45.2		327	15.1	10.0-22.0	
Involvement in domestic chores when aged 15-18				0.9525				0.3873
Helped or had no obligation at all	176	25.9	15.9-39.3		822	11.7	8.4-16.3	
Was responsible for household chores or divided responsibility equally	67	26.4	14.8-42.6		206	15.8	8.9-26.5	
Paid employment for more than 3 months prior to reaching the age of 20				0.3002				0.1408
Yes	206	27.4	18.2-39.0		705	13.7	10.3-17.9	
No	37	16.8	6.3-37.7		318	9.5	5.5-15.9	

(continues)

Table 2 (continued)

Covariables	Pregnancy prior to reaching the age of 20				No pregnancy prior to reaching the age of 20			
	Failed to finish basic education							
	n	%	95%CI	p-value	n	%	95%CI	p-value
Overall proportion	271	73.1	64.4-80.4		1,143	43.0	37.7-48.4	*
City				0,4112				0.0338
Porto Alegre	82	71.0	60.2-79.8		391	32.2	24.0-41.7	
Rio de Janeiro	89	70.4	54.9-82.3		387	41.4	33.1-50.1	
Salvador	100	78.7	69.6-85.6		365	51.9	44.2-59.6	
Per capita monthly family income **				0.0000				0.0000
≤ US$70.00	129	90.1	82.6-95.4		264	76.1	68.2-82.6	
> US$70.00	142	53.0	40.7-65.0		879	31.1	25.7-37.1	
Level of mother's education				0.0056				0.0000
Did not complete Elementary School	125	80.0	67.0-88.7		359	65.2	57.6-72.2	
Completed Elementary School	45	71.7	52.8-85.1		182	44.1	33.9-54.8	
Attended High School/University	79	50.7	35.7-65.6		535	14.1	10.2-19.2	
Race/Ethnicity				0.0066				0.0000
White	106	57.2	41.8-71.3		618	28.3	22.1-35.5	
Mixed Race	49	75.5	59.1-86.8		228	42.3	34.4-50.6	
Black	87	85.7	73.1-92.9		218	64.9	57.8-71.3	
Brazilian Indian	26	62.9	36.6-81.4		64	80.2	66.2-89.4	
Number of siblings				0.0002				0.0000
None or 1	64	43.8	27.7-61.3		369	24.7	18.9-31.6	
2 or more	207	80.1	70.8-87.0		773	50.9	44.9-56.8	
Parents separated				0.1597				0.0079
Still together or separated after child reached the age of 20	158	68.9	55.8-79.6		762	39.1	33.3-45.3	
Separated prior to child reaching the age of 20	111	79.7	68.8-87.5		375	51.1	43.1-50.1	
Involvement in domestic chores when aged 15-18				0.1275				0.0098
Helped or had no obligation at all	192	69.7	57.8-79.5		777	21.2	16.9-26.3	
Was responsible for household chores or divided responsibility equally	75	80.9	70.3-88.4		334	34.3	26.1-43.6	
Paid employment for more than 3 months prior to reaching the age of 20				0.3158				0.0001
Yes	227	74.4	64.7-82.1		793	47.1	41.4-52.9	
No	40	64.2	43.7-80.6		344	30.8	24.0-38.7	

* $p < 0.05$;

** Categories defined based on the prevailing nationwide minimum wage (US$70.00).

Source: GRAVAD study, 2002. Population: young people between the ages of 20 and 24 in Porto Alegre (Rio Grande do Sul State), Rio de Janeiro (Rio de Janeiro State), Salvador (Bahia State).

found with skin color/ethnicity, having more siblings, having separated parents, participation in household chores and being in paid employment for more than three months prior to reaching the age of 20 (Table 4).

With respect to macrosocial factors, at the first level the variable city lost statistical significance in all categories and for this reason was removed from the model. Having two or more siblings and the fact that parents had separated prior to the individual reaching the age of 20 were factors associated with non-completion of basic education, even following adjustment for the other factors. No association was detected with being in paid employment for more than three months prior to reaching the age of 20. However, the non-completion of school rate was higher in boys who made a girl pregnant during

Table 3

Hierarchical analysis using logistic regression of the factors associated with non-completion of basic education in girls between the ages of 20 and 24.

Factors	OR (95%CI)				
	Crude	Adjusted (n = 1,484)			
		Level I *	Level II **	Level III ***	Level IV #
Macro-social factors					
City					
Porto Alegre	1.00 ##	1.00 ##			
Rio de Janeiro	1.01 (0.57-1.81)	0.92 (0.57-1.48)			
Salvador	1.52 (0.87-2.65)	0.76 (0.44-1.32)			
Per capita monthly family income ###					
≤ US$70.00	6.59 (4.60-9.45)	4.21 (2.97-5.97)	3.52 (2.52-4.92)	3.50 (2.50-4.91)	**3.08 (2.13-4.46)**
> US$70.00	1.00 ##	1.00 ##	1.00 ##	1.00 ##	1.00 ##
Level of mother's education					
Completed or failed to complete Elementary School	8.30 (5.41-12.74)	4.86 (3.14-7.51)	5.10 (3.41-7.63)	5.14 (2.45-7.66)	**4.44 (2.93-6.72)**
Attended High School/University	1.00 ##	1.00 ##	1.00 ##	1.00 ##	1.00 ##
Race/Ethnicity					
White	1.00 ##	1.00 ##			
Not white	2.54 (1.81-3.57)	1.37 (0.91-2.07)			
Family factors					
Number of siblings					
None or 1	1.00 ##		1.00 ##	1.00 ##	1.00 ##
2 or more	3.41 (2.36-4.93)		2.24 (1.61-3.13)	2.23 (1.60-3.11)	**2.05 (1.42-2.96)**
Separation of parents					
Still together/Separated when child was 20 years old or more	1.00 ##		1.00 ##	1.00 ##	1.00 ##
Separated prior to child reaching the age of 20	1.59 (1.16-2.16)		1.74 (1.19-2.55)	1.76 (1.20-2.57)	1.47 (0.96-2.27)
Involvement in domestic chores when aged 15-18					
Helped or had no obligation at all	1.00 ##		1.00 ##	1.00 ##	1.00 ##
Was responsible for household chores or divided responsibility equally	2.56 (1.83-3.59)		1.57 (1.12-2.21)	1.59 (1.13-2.23)	1.36 (0.92-2.00)
Factors related to employment					
Paid employment for more than 3 months prior to reaching the age of 20					
Yes	1.03 (0.74-1.45)			0.90 (0.63-1.27)	
No	1.00 ##			1.00 ##	
Factors related to pregnancy					
Pregnancy prior to reaching the age of 20					
Yes	7.16 (5.07-10.12)				4.36 (3.01-6.31)
No	1.00 ##				1.00 ##

OR: odds ratio; 95%CI: 95% confidence interval.

* Contextual factors;

** Selected variables from level I and factors related to the family;

*** Selected variables from levels I and II and factors related to work;

Selected variables from levels I, II and III and factors related to pregnancy;

Reference group;

Categories defined based on the prevailing nationwide minimum wage (US$70.00).

Source: GRAVAD study, 2002. Population: young people between the ages of 20 and 24 in Porto Alegre (Rio Grande do Sul State), Rio de Janeiro (Rio de Janeiro State), Salvador (Bahia State).

Table 4

Hierarchical analysis using logistic regression of the factors associated with non-completion of basic education in boys between the ages of 20 and 24.

Factors	OR (95%CI)				
	Crude	Adjusted (n = 1,289)			
		Level I *	Level II **	Level III ***	Level IV #
Macro-social factors					
City					
Porto Alegre	1.00 ##	1.00 ##			
Rio de Janeiro	1.36 (0.78-2.37)	0.89 (0.58-1.38)			
Salvador	2.00 (1.13-3.55)	0.67 (0.39-1.15)			
Per capita monthly family income ###					
≤ US$70.00	9.18 (5.98-14.12)	6.04 (3.83-9.53)	4.98 (3.21-7.74)	4.99 (3.24-7.69)	**4.45 (2.90-6.82)**
> US$70.00	1.00 ##	1.00 ##	1.00 ##	1.00 ##	1.00 ##
Level of mother's education					
Completed or failed to complete Elementary School	6.93 (5.00-9.63)	4.15 (2.96-5.81)	4.22 (2.98-5.97)	4.03 (2.84-5.71)	**4.32 (3.08-6.07)**
Completed High School/University	1.00 ##	1.00 ##	1.00 ##	1.00 ##	1.00 ##
Race/Ethnicity					
White	1.00 ##	1.00 ##	1.00 ##	1.00 ##	1.00 ##
Not white	3.12 (2.24-4.34)	2.00 (1.30-3.09)	1.68 (1.15-2.45)	1.65 (1.13-2.41)	**1.65 (1.12-2.44)**
Family factors					
Number of siblings					
None or 1	1.00 ##		1.00 ##	1.00 ##	1.00 ##
2 or more	3.79 (2.70-5.30)		2.16 (1.53-3.03)	2.16 (1.53-3.05)	**2.11 (1.48-3.01)**
Separation of parents					
Still together/Separated when child was 20 years old or more	1.00 ##		1.00 ##	1.00 ##	1.00 ##
Separated prior to child reaching the age of 20	1.72 (1.23-2.42)		1.85 (1.19-2.87)	1.85 (1.20-2.87)	**1.84 (1.19-2.86)**
Involvement in domestic chores when aged 15-18					
Helped or had no obligation at all	1.00 ##		1.00 ##	1.00 ##	1.00 ##
Was responsible for household chores or divided responsibility equally	2.02 (1.38-2.96)		1.69 (1.07-2.68)	1.67 (1.04-2.68)	1.65 (1.00-2.71)
Factors related to employment					
Paid employment for more than 3 months prior to reaching the age of 20					
Yes	2.10 (1.49-2.96)			1.43 (0.90-2.29)	
No	1.00 ##			1.00 ##	
Factors related to pregnancy					
Pregnancy prior to reaching the age of 20					
Yes	3.44 (2.19-5.39)				2.33 (1.33-4.09)
No	1.00 ##				1.00 ##

OR: odds ratio; 95%CI: 95% confidence interval.

* Contextual factors;

** Selected variables from level I and factors related to the family;

*** Selected variables from levels I and II and factors related to work;

Selected variables from levels I, II and III and factors related to pregnancy;

Reference group;

Categories defined based on the prevailing nationwide minimum wage (US$70.00).

Source: GRAVAD study, 2002. Population: young people between the ages of 20 and 24 in Porto Alegre (Rio Grande do Sul State), Rio de Janeiro (Rio de Janeiro State), Salvador (Bahia State).

adolescence compared to boys with no involvement in pregnancy, even in the adjusted model.

The majority of the girls in elementary or high school who became pregnant during adolescence carried their first pregnancy to term. The percentage of girls that carried their first pregnancy to term was higher (81.9%) in the case of girls that did not complete elementary school than in the case of girls who completed elementary school; however, the statistical significance of this difference was borderline. Reports of abortion were around four times higher in the girls who graduated from high school compared to girls that failed to complete high school and this difference was statistically significant (Figure 1).

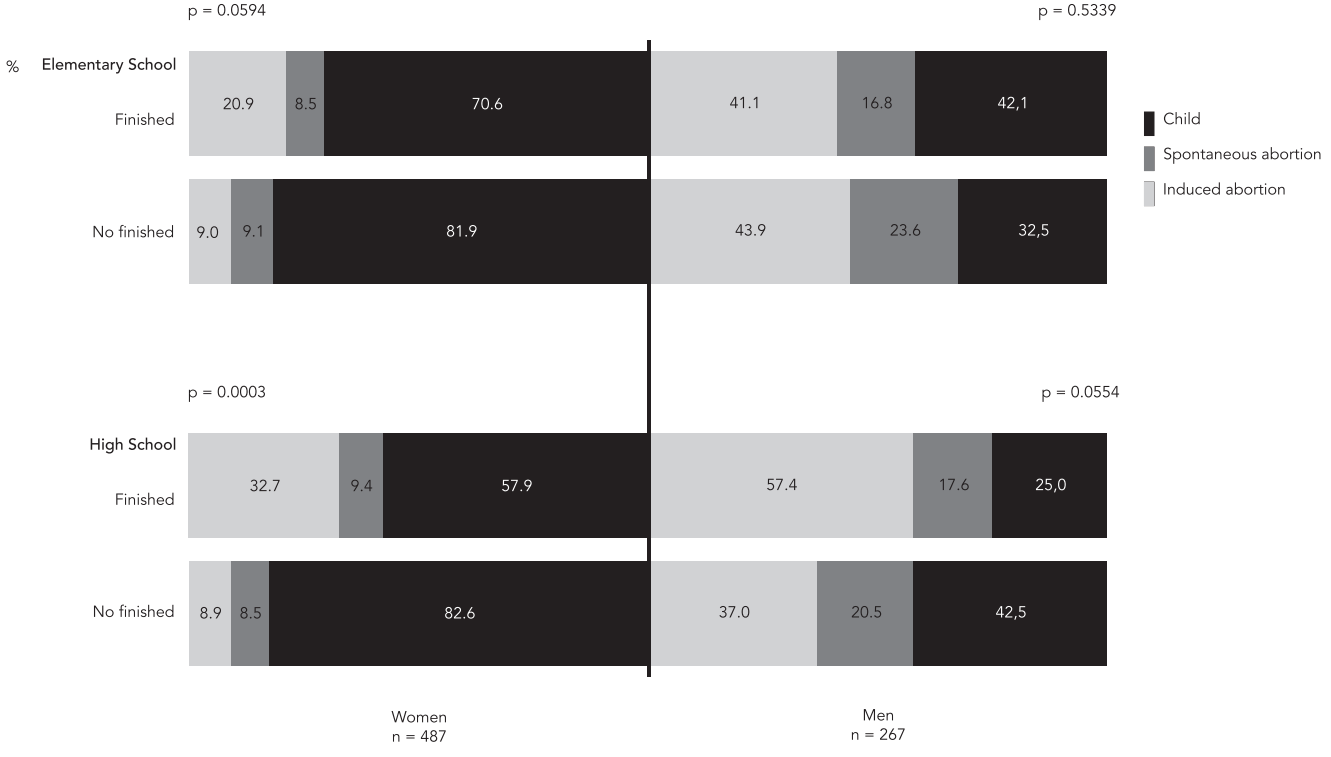
Boys in elementary school and high school who had made a girl pregnant in adolescence reported higher rates of abortion; however, there were no statistically significant differences between this pregnancy outcome and completion of high school. Abortion was reported twice as often as births (57.4% and 25% respectively) by boys who completed high school; however, the statistical significance of this relationship was borderline (Figure 1).

Discussion

This study was performed using data obtained from a population-based survey in three Brazilian cities carried out in a representative sample of girls and boys between the ages of 18 and 24 that have different social and cultural backgrounds. It should be emphasized that the inclusion of boys in this study provided an insight into adolescent paternity and the relationship between this phenomenon and educational achievement.

Figure 1

Outcome of the first pregnancy prior to reaching the age of 20 according to whether the young person finished school; mean percentages completing High School according to gender in young people between the ages of 20 and 24.



Source: GRAVAD study, 2002.

Note: population – young people of 20-24 years of age in Porto Alegre (Rio Grande do Sul State), Rio de Janeiro (Rio de janeiro State) and Salvador (Bahia State).

Only two-thirds of the girls and half the boys interviewed completed basic education. The proportion of individuals who experienced pregnancy in adolescence that failed to complete school was very high in girls (70.5%) and boys (73.1%). For both boys and girls, coming from a household with low per capita family income and having a mother with a low level of education were factors strongly associated with non-completion of basic education. Adolescent pregnancy was also a factor associated with non-completion of school, adding to the preexisting disadvantages related to the adolescent's social and cultural background.

Intentional errors may have occurred, particularly with respect to declared pregnancy and abortion with girls underreporting pregnancy for example. However, the design of the research instrument, which included questions on the individual's reproductive life at different moments during the interview, should have ensured the identification of any inconsistencies.

Biases may have occurred in the information given by boys regarding making a girl pregnant. However, when questioning the girls who reported having become pregnant on the reaction of their partner to the pregnancy, only 2.2% stated that they did not tell him about it [25]. Although the study did not interview the girls and their respective partners, it is believed that this finding may be extrapolated to the boys who participated in the study.

The moral censorship of abortion and the fact that it is illegal in Brazil may have discouraged adolescents, particularly girls, from reporting this pregnancy outcome [26]. Although boys should have less difficulty in reporting abortion, as they were not directly involved in the procedure, it is possible that the information they provided on the girl's pregnancy is less accurate and consistent.

Considering that seven is the official school starting age for compulsory education in Brazil, the proportion of individuals who were over seven years of age when they began school (8.8% of girls and 15.4% of boys) is low in comparison to the national average of 18.9% according to the 2005 School Census on Basic Education [27] of all children enrolled in the first grade of elementary school in Brazil [28].

It was found that the proportion of an age-grade gap at the beginning of elementary school was greater among the girls and boys who had reported pregnancy in adolescence, with the highest proportion occurring in the sample from Salvador. This finding may be a consequence of regional inequalities in education, the economy and urban development, whereby states in the north and northeast of the country have the worst education indicators (age-grade gap, repetition and dropout rates) [27]. The proportion of individuals from households with lower per capita family income and with mothers with low levels of education was also higher in this sample, indicating the selectivity of the Brazilian education system.

Although the rate of non-completion of school was greater among boys and girls who had experienced pregnancy in adolescence and who had a less favorable family background and socioeconomic status, it is important to note that a significant proportion of boys and girls with the same characteristics but that did not experience pregnancy also failed to complete their basic education. It may therefore be assumed that those in this situation were already more likely not to complete their education and that the occurrence of a reproductive event constituted an aggravating factor. For less privileged young people, pregnancy may represent a change in social status, offering better prospects for the immediate future [5]. In addition, where family conflict is involved, a partner and motherhood may seem like a solution to these problems [11].

Among the boys, a desire for financial independence and a tendency to follow an irregular path through school can be noted, justified by the desire and need to work and loss of interest in school [29].

Some studies attribute educational disadvantages to the type of family structure experienced by young people [7,15]. The proportion of individuals whose parents were separated at the time of pregnancy in adolescence that failed to complete basic education was greater than that of individuals whose parents remained together or who only separated after their children had gone through adolescence. However, the overlapping confidence intervals indicate that there was no statistically significant difference. This was confirmed in the groups of girls when the association between these factors lost statistical significance when other variables were introduced into the multivariate analysis.

It should be noted that this study did not evaluate the amount of time participants spent with each parent, the number of times that parents separated and the formation of other relationships by their parents. An analysis of these factors may have resulted in different interpretations of the findings, as previously described by other studies [15,16].

The association with having more siblings was maintained at all levels of the model, suggesting that the socioeconomic status of the family has a direct effect, since when families with

low income have more children it is generally necessary to share already insufficient resources among the siblings [17,30]. It is already known that there is no association between the academic performance of more privileged adolescents and the number of siblings an individual has [30]. An interesting line of investigation for future studies would be to evaluate the association between adolescent's school performance and their mother's and father's education levels, since the academic success or failure of the child appears to vary as a function of the parents' education levels [31].

Gender inequalities were found to exist in the case of the covariable worked in paid employment for more than three months prior to turning 20. In the case of girls, work did not appear to be associated with failure to complete basic education even when pregnancy occurred in adolescence, suggesting that other motives led non-completion of school in this group. Boys who had worked for more than three months in adolescence were more likely to report having left school prior to completing basic education, irrespective of whether they had made a girl pregnant or not. However, when the relationship between work and non-completion of high school was evaluated, a crude association was found that lost statistical significance when the macrosocial and family variables were incorporated into the model.

Boys from different social groups seek work for different motives: middle class boys work to gain financial independence, whereas those from the less privileged social classes also report the need to help support the family [29,31]. Even when pregnancy in adolescence constitutes a pressing reason for an adolescent boy to seek work, it does not appear to be the principal motivating factor. On the other hand, boys from more underprivileged families report experiencing difficulties in conciliating work with study, forcing them to abandon school [31].

The finding that more of the girls and boys who completed basic education reported abortion is in agreement with the hypothesis that these individuals prioritize an academic career over parenthood. Studies reported in the published literature show that young people from more privileged backgrounds are subjected to greater pressure from their families to complete their studies, hence postponing parenthood [5,13,29]. Similarly, young adults at university mention the use of emergency contraception so as not to hinder their future [32]. It should therefore be emphasized that the socioeconomic status of the individuals is an important factor to be considered in interpreting this finding.

The finding that more males reported abortion should be interpreted with caution. Boys find it less difficult to mention having terminated a pregnancy because girls are usually responsible for this act. The association found between pregnancy in adolescence and the non-completion of school by boys was intriguing as the principal outcome reported in these cases was abortion. This finding deserves further investigation in other studies, specifically from a longitudinal perspective that would provide a better understanding of the effect of adolescent pregnancy on the academic careers of boys.

Finally, the characteristics of the affective, sexual and reproductive trajectories experienced by boys are different from those experienced by girls. In general, boys become sexually active earlier and have more casual or simultaneous relationships, and thus they are more exposed to the risk of an unplanned pregnancy that may end up in an abortion [21].

The objective of this study was to evaluate the association between macrosocial factors, adolescent pregnancy and the completion of basic education. Girls from households with a per capita family income of one minimum salary or less, whose mother had a low level of education, who became pregnant at least once in adolescence and who had two or more siblings were more likely to have not completed basic education; whereas boys from households with a per capita family income of US$70.00 or less, whose mother had a low level of education, with two or more siblings, having parents who separated before the adolescent reached 20 years of age and who made a girl pregnant prior to turning 20 years of age were more likely to have not completed basic education.

The results of this study indicate that the social and cultural differences of boys and girls with regard to sexuality and reproduction are a challenge to be faced by the education system. Sex education and the promotion of actions to stimulate students to remain in the education system are vital measures that need to be taken. More effective educational policies are required in order to reduce the selectivity that exists within the education system. In addition, policies should be implemented to encourage young people to return to school and these should be articulated together with policies aimed at improving the health of adolescents of both sexes, by providing guidance on the choice and use of contraceptive methods and how to gain access to them.

Resumo

Esse estudo avaliou a associação entre a gravidez na adolescência e a conclusão da educação básica mediada por marcadores macrossociais. Um inquérito do tipo corte transversal foi realizado em 2001 com jovens de 18 a 24 anos de três capitais brasileiras. Dos 4.634 jovens entrevistados, selecionou-se aqueles que na época da entrevista encontravam-se com 20 a 24 anos. A gravidez antes dos 20 anos foi declarada por 29,6% das moças, e 21,4% dos rapazes mencionaram ter engravidado uma parceira na adolescência. As jovens com renda familiar per capita *de até US$70, que engravidaram na adolescência ao menos uma vez, referiram mais freqüentemente não terem concluído a educação básica. Entre os homens, ter renda familiar* per capita *até US$70, ter pais separados antes dos 20 anos e ter engravidado uma parceira antes dos 20 anos, implica a maior chance de não concluir a educação básica. Cabe ao sistema escolar orientar os jovens quanto à sexualidade e à contracepção, mas também estimular a sua permanência na escola.*

Gravidez na Adolescência; Identidade de Gênero; Educação

Contributors

M. C. C. Almeida participated in the construction and management of the database, statistical analysis and interpretation of results and drafting of this article. E. M. L. Aquino participated in the design and coordination of the study in all its stages, including data analysis and writing this article.

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References

1. Heilborn ML, Salem T, Rohden F, Brandão E, Knauth D, Victora C, et al. Aproximações socioantropológicas sobre a gravidez na adolescência. Horizontes Antropológicos 2002; 8:13-45.
2. Singh S. Adolescent childbearing in developing countries: a global review. Stud Fam Plann 1998; 29:117-37.
3. Klepinger DH, Lundberg S, Plotnick RD. Adolescent fertility and the educational attainment of young women. Fam Plann Perspect 1995; 27:23-8.
4. Fujimori E, Oliveira IMV, Lima AR, Cassana LMN, Szarfarc SC. Perfil socioeconómico y biológico de embarazadas adolescentes de una maternidade de beneficencia en São Paulo, Brasil. Cuad Méd-Soc (Santiago de Chile) 1997; 38:97-104.
5. Dadoorian D. Gravidez na adolescência: um novo olhar. Psicol Ciênc Prof 2003; 21:84-91.
6. Sabroza AR, Leal MC, Souza Jr. PR, Gama SGN. Algumas repercussões emocionais negativas da gravidez precoce em adolescentes do Município do Rio de Janeiro (1999-2001). Cad Saúde Pública 2004; 20 Suppl 1:S130-7.
7. Zech W, Bjelic-Radisic V, Haas J, Greimel E. Impact of adolescent pregnancy on the future life of young mothers in terms of social, familial and educational changes. J Adolesc Health 2007; 41:380-8.
8. Almeida MCC, Aquino EML, Barros AP. School trajectory and teenage pregnancy in three Brazilian state capitals. Cad Saúde Pública 2006; 22:1397-409.
9. Gupta N, Leite IC. Tendências e determinantes da fecundidade entre adolescentes no Nordeste do Brasil. Perspectivas Internacionais de Planejamento Familiar 2001; (número especial):24-9.
10. Souza MMC. A maternidade nas mulheres de 15 a 19 anos como desvantagem social. In: Seminário Gravidez na Adolescência. Rio de Janeiro: Associação Saúde da Família; 1998. p. 74-91.
11. Stern C, Medina G. Adolescencia y salud en México. In: Oliveira MC, editor. Cultura, adolescência e saúde: Argentina, Brasil, México. Campinas: Consórcio de Programas em Saúde Reprodutiva e Sexualidade na América Latina (CEDES/COLMEX/NEPO/UNICAMP); 2000. p. 98-160.

12. Brandão ER, Heilborn ML, Aquino EML, Knauth DR, Bozon M. Juventude e família: reflexões preliminares sobre a gravidez na adolescência em camadas médias urbanas. Interseções: Revista de Estudos Interdisciplinares 2001; 3:159-80.
13. Menezes GMS, Aquino EML, Silva DO. Induced abortion during youth: social inequalities in the outcome of the first pregnancy. Cad Saúde Pública 2006; 22:1431-46.
14. Silva NV, Hasenbalg C. Recursos familiares e transições educacionais. Cad Saúde Pública 2002; 18 Suppl:67-76.
15. Sandefur GD, Wells T. Does family structure really influence educational attainment? Soc Sci Res 1998; 28:331-57.
16. Alderman-Swain W, Battle J. The invisible gender: educational outcomes for African American females in father-only versus mother-only households. Race & Society 2000; 3:165-82.
17. Marteleto LJ. O papel do tamanho da família na escolaridade dos jovens. Rev Bras Estud Popul 2002; 19:159-77.
18. Jæger MM, Holm A. Does parents' economic, cultural, and social capital explain the social class effect on educational attainment in the Scandinavian mobility regime? Soc Sci Res 2007; 36:719-44.
19. Madeira FR. A trajetória das meninas dos setores populares: escola, trabalho ou... reclusão. In: Madeira FR, organziador. Quem mandou nascer mulher? Rio de Janeiro: Record/Rosa dos Tempos; 1997. p. 45-133.
20. Rosemberg F. Educação formal, mulheres e relações de gênero: balanço preliminar da década de 90. In: Bruschini C, Unbehaum SG, organizadores. Gênero, democracia e sociedade brasileira. São Paulo: Editora 34; 2002. p. 195-224.
21. Heilborn ML, Aquino EML, Knauth DR, Bozon M, organizadores. O aprendizado da sexualidade: um estudo sobre reprodução e trajetórias sociais de jovens brasileiros. Rio de Janeiro: Editora Fiocruz/Garamond; 2006.
22. Sociedade Civil Bem-estar Familiar no Brasil. Pesquisa Nacional sobre Demografia e Saúde. Rio de Janeiro: Sociedade Civil Bem-estar Familiar no Brasil; 1996.
23. World Health Organization. Young people's health: a challenge to society. Geneva: World Health Organization; 1986. (WHO Technical Report Series, 731).
24. Ministério da Saúde. Programa de Saúde do Adolescente: bases programáticas. Brasília: Ministério da Saúde; 1989.
25. Aquino EML, Almeida MCC, Menezes G. Gravidez na adolescência: a heterogeneidade revelada. In: Heilborn ML, Aquino EML, Knauth DR, Bozon M, organizadores. O aprendizado da sexualidade: um estudo sobre reprodução e trajetórias sociais de jovens brasileiros. Rio de Janeiro: Editora Fiocruz/Garamond; 2006. p. 309-60.
26. Barreto TA, Campbell OMR, Davies JL, Fauveau V, Filippi VGA, Graham WJ, et al. Investigating induced abortion in developing countries: methods and problems. Stud Fam Plann 1992; 23:159-70.
27. Instituto Nacional de Estudos e Pesquisas Educacionais. Sinopse estatística da educação básica: censo escolar 2006. http://www.inep.gov.br/basica/censo/Escolar/Sinopse/sinopse.asp (accessed on 26/Dec/2007).
28. Instituto Nacional de Estudos e Pesquisas Educacionais. Informativo do INEP 2006; Ano 4, nº. 141.
29. Cabral CS. "Gravidez na adolescência" e identidade masculina: repercussões sobre a trajetória escolar e profissional do jovem. Rev Bras Estud Popul 2002; 19:179-95.
30. Singly F. Sociologia da família contemporânea. Rio de Janeiro: Editora FGV; 2007.
31. Bourdieu P. A escola conservadora: as desigualdades frente à escola e à cultura. In: Nogueira MA, Catani A, organizadores. Escritos de educação. 6ª Ed. Petrópolis: Editora Vozes; 2004. p. 41-64.
32. Borges ALV, Fujimori E, Hoga LAK, Contin MV. Práticas contraceptivas entre jovens universitários: o uso da anticoncepção de emergência. Cad Saúde Pública 2010; 26:816-26.

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