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Maternity and paternity in the Pelotas birth cohort from 1982 to 2004-5, Southern Brazil

ABSTRACT

OBJECTIVE: To describe the prevalence of maternity and paternity among subjects and its association with perinatal, socioeconomic and demographic variables.

METHODS: The participants were youth, aged 23, on the average, accompanied in a cohort study since they were born, in 1982, in Pelotas (Southern Brazil) and interviewed in 2004-5. Those who were considered eligible referred having had one or more children, whether these were liveborns or stillborns. Data was collected on reproductive health as well as socioeconomic and demographic information, by means of two different instruments. The independent variables were sex and skin color, family income in 1982 and in 2004-5, changes in income, birth weight and educational level when aged 23 years old. Crude and adjusted analysis were conducted by means of Poisson regression so as to investigate the effects of the independent variables on maternity/paternity during adolescence.

RESULTS: Among the 4,297 youth interviewed, 1,373 (32%) were parents and 842 (19.6%) of these had experienced maternity/paternity during their adolescence. Planned pregnancy of the first child was directly related to the youth's age. Socioeconomic variables were inversely related to the occurrence of maternity/paternity during adolescence. The probability of being an adolescent mother was higher among black and mixed skin colored women, but skin color was not associated to adolescent paternity.

CONCLUSIONS: There was a strong relation between adolescent maternity/paternity and socioeconomic conditions, which should be taken into consideration when delineating preventive actions in the field of public health.

DESCRIPTORS: Adult. Parents. Pregnancy in Adolescence. Pregnancy, Unplanned. Socioeconomic Factors. Sexual and Reproductive Health. Cohort Studies. Brazil.

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INTRODUCTION

The importance of pregnancy in adolescence as a public health problem is controversial.^{12,13,17} The apparently unfavorable effects of pregnancy in adolescence – for both mother and child – tend to disappear once socioeconomic factors are controlled, except for maternity among very young adolescents.⁶ On the other hand, the effects of early pregnancy on the social, educational and economic trajectory of women are more difficult to analyze, for these outcomes are also factors that predispose for pregnancy.⁴

The occurrence of pregnancy in adolescence has been declining since the 1970s in developed countries.¹⁹ On the other hand, in the 1980s, the tendencies

with respect to the specific rates of fecundity among adolescents aged 15 to 19 years old, in some countries in Latin America were not uniform. While there were decreases in these rates in Bolivia, the Dominican Republic, Mexico and Peru, there were increases in other countries, including Brazil.¹⁸ However, more recent data from Brazil, obtained through the *Indicadores de Dados Básicos (IDB-2006)* [Basic Data Indicators] indicate that the specific rate of fecundity for adolescents aged 15 to 19 are also decreasing: de 83.9/1000 in 1996 to 71.4/1000 in 2004.^a This also implied in a discreet reduction in the proportion of adolescent mothers, between 1996 and 2004, from 22.9% to 21.8%.

Information on maternity during adolescence are also available by means of secondary data from the *Departamento de Informática do Sistema Único de Saúde (DATASUS)* [Department of Information of the Unified Health System], or from local studies that, in their majority include young pregnant women who frequent the health services. However, paternity in adolescence has not been studied frequently in Brazil. One exception was a multicentric study on sexuality and reproduction among youth aged 18 to 24 years old,⁵ for whom the reproductive experience occurred before they were 20 years old among 17.9% of the women and 6.3% of the men.

Factors associated with parity in adolescence were analyzed by means of a case-control study nested in a 1982 birth cohort in Pelotas, Southern Brazil.⁹ The influence of low socioeconomic level on maternity in adolescence was also described in studies conducted both in developed and developing countries.^{9,10,15,22} However, information on paternity in Latin American countries are scarce.³ Thus, this article describes maternity and paternity among young adults in the cohort, distinguishing three adolescent age groups and possible associated perinatal, socioeconomic and demographic factors.

METHODS

This study includes young adults from the 1982 birth cohort conducted in the city of Pelotas, Southern Brazil. Details concerning the cohort's methodology may be found in this Supplement in other articles (Victoria et al,^{20,21} 2003, 2006 and Barros et al,² 2008)

In 2004-5, a household census was conducted in order to accompany the 1982 birth cohort, identifying the participants, then young adults, who, in average, were 23 years old. The study instruments included two questionnaires, one applied by the interviewer and the other self-applied. The first included questions on behavior related to the young adults' health, such as, for example, the use of health services, eating habits, physical activity and

cigarette smoking, besides questions on health in general. The young adults' reproductive health was approached both in the questionnaire applied by the interviewer and the self-applied questionnaire, where issues of a more confidential nature, such as sexual behavior of risk or the use of alcohol and drugs were also included.

Those interviewed that stated during the interview conducted in 2004-5, they had a child, whether it was a live born or a still born, were included in analysis. The age of the interviewee when his/her first child was born was collected in a continuous form and was categorized in three age groups: 11 to 15 years old; 16 to 19 years old and 20 to 23 years old. Information concerning family planning of the first pregnancy was also collected.

The independent variables included in this analysis were: birth weight, sex, skin color and schooling of the participants, family income in 1982, changes in income between 1982 and 2004-5.

Descriptive analysis of the independent variables was conducted according to the age of the interviewee when his/her first child was born and whether or not this was a planned pregnancy. Crude and adjusted analysis was conducted by means of Poisson regression so as to investigate the effects of the independent variables on maternity/paternity during the entire adolescent period (11 to 19 years of age). Effects of the independent variables on pregnancy in adolescence according to each separate age group (11 to 15 and 16 to 19 years) were also investigated. A hierarchical model of analysis was utilized in adjusted analysis, having the variables skin color and income, on its first level, birth weight on its second level, and, on the third level, the young adults' schooling.

Verbal informed consent was obtained from the children's guardians in the 1982-86 phases of the study, as was common practice during that period, when an ethics committee was still inexistent at the Federal University of Pelotas. In recent phases, the Ethics in Research Committee of the University, affiliated to the *Conselho Nacional de Ética em Pesquisa - CONEP* (National Council on Ethics in Research), approved the study, and written informed consent was obtained from participants.

RESULTS

Among the total 4,297 young adults interviewed, 32% stated they had at least one child and 842 of these (19,6%) had experienced maternity/paternity during adolescence. There was a significant difference as to sex: 11% of the men had children during their adolescence compared to 29% of the women.

^a Ministério da Saúde. Datasus. Taxa específica de fecundidade. Brasília; 2000.

Table 1 presents the prevalence of paternity among the age groups and its association with demographic and socioeconomic variables as well as birth weight. Paternity was more frequent with increasing age and among Blacks or Mixed skin color in all age groups. The lower the family income in 1982, the greater the probability of paternity: among the families with income above three minimum wages, none of the youths experienced paternity before they were 16 years old. Paternity was also more frequent among those that remained in the lowest income group between 1982 and 2004-5 and among those with less schooling.

Maternity in the different age groups is presented on Table 2. As indicated, almost 5% of the young women had children when they were 11 to 15 years old, among those whose skin color is black or mixed,

the proportion was 6.9%. The percentage of women whose first child was born when they were 20 to 23 years old was lower than those born among women aged 16-19 years old. As to the association with demographic and socioeconomic variables, the results were similar to those observed with respect to paternity, being maternity more prevalent among young women whose skin color was black or mixed, with lower family incomes between 1982 and 2004-5, whose birth weight was lower and who had less schooling. An elevated prevalence of very early pregnancy (between 11 and 15 years of age) was also observed among poor girls, particularly those whose families remained poor. Furthermore, more than half (52.5%) the women in the cohort who remained in the poorest group had children during their adolescence, in comparison to 14.8% of those whose families were never poor.

Table 1. Sociodemographic characteristics of young adults according to paternity. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable	n	Age at birth of first child (yrs)			p
		No children %	11 to 15 %	16 to 19 %	
Skin color*					0.01**
White	1.658	78.2	0.5	9.2	12.0
Black or Mixed	471	70.3	1.3	13.2	15.3
Family income-1982*** (MW)					<0.001****
≤1	438	67.1	1.1	13.5	18.3
1.1 to 3	1.095	72.6	0.9	12.0	14.5
3.1 to 6	417	86.3	0	5.8	7.9
6.1 to 10	130	88.5	0	6.9	4.6
>10	123	95.1	0	1.6	3.3
Change in income (1982 → 2004-5)					<0.001****
Always poor	335	57.0	1.5	16.4	25.1
Not poor → poor	340	61.8	1.5	14.4	22.4
Poor → not poor	360	77.2	0.8	10.8	11.1
Never was poor	1.178	85.7	0.2	7.0	7.1
Birth weight (grams)					0.33****
<2500	136	76.5	0.7	9.6	13.2
2500 to 2999	451	74.5	1.3	10.4	13.7
3000 to 3499	849	75.7	0.4	10.2	13.7
3500 to 3999	612	78.3	0.8	9.8	11.1
≥4000	165	76.4	0	11.5	12.1
Schooling (yrs)					<0.001****
0 to 4	209	59.3	1.9	18.7	20.1
5 to 8	718	63.5	1.4	16.7	18.4
9 to 11	1,01	83.2	0.1	6.3	10.4
≥12	276	97.1	0	1.1	1.8
Total	2,213	76.3	0.7	10.2	12.8

MW: Minimum wage

* 84 interviewees classified themselves as yellow or indigenous

** Wald test for heterogeneity

*** From a total of 2,213 male interviewees in 2004-5 lack of information occurred in 10 cases (0.5% of the interviewees)

**** Test for linear tendency

Approximately one third of the young adults who became mothers or fathers reported that they planned the pregnancy of their first child. These proportions were different for men (27.2%) and women (34.6%) and also varied according to their age when the first child was born. The Figure indicates the prevalence of maternity/paternity during adolescence and whether or not it was planned according to family income. Thirty percent of the men and 40% of the women of the poorest families that had children stated they had planned the pregnancy. These proportions decreased with the increase in family income. Among the men and women with the highest family income, for example, none of the men or women stated they had planned their pregnancies.

The crude and adjusted analysis of the effects of demographic and socioeconomic variables as well as birth

weight on maternity/paternity in adolescence (up to and including young adults ages 19 years old) are presented on Table 3 for men and Table 4 for women. Table 3 indicates that paternity in adolescence was more frequent among young adults who came from families with the lowest incomes in 1982 and from those whose families became poorer. No association was observed between birth weight of the young adult and paternity in adolescence. The probability of becoming a father before they were 20 years old was 15 times greater among those individuals who had not gone to high school compared to those who had graduated high school.

Table 4 indicates that maternity in adolescence was also associated with variables related to family income, being ten times more frequent among the poorest families. The risk was greater among women with black or mixed

Table 2. Sociodemographic characteristics of young adults according to maternity. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable	n	No children		Age at birth of first child (years)			P
		%		11 to 15 %	16 to 19 %	20 to 23 %	
Skin color*							<0.001**
White	1,58	62.3		3.5	22.4	11.8	
Black or Mixed	437	50.6		6.9	30.4	12.1	
Family income-1982*** (MW)							<0.001****
≤1	414	42.3		8.0	36.0	13.8	
1.1 to 3	1,031	55.1		4.8	26.4	13.8	
3.1 to 6	383	70.5		3.4	15.9	10.2	
6.1 to 10	122	86.1		2.5	8.2	3.3	
>10	121	93.4		0	4.1	2.5	
Change in income (1982→2004-5)***							<0.001****
Always poor	373	31.1		9.1	43.4	16.4	
Not poor → poor	374	39.3		8.6	35.3	16.8	
Poor → not poor	305	61.3		4.6	24.3	9.8	
Never was poor	1,031	76.1		1.7	13.1	9.0	
Birth weight (grams)***							0.005****
<2500	165	58.8		3.0	24.8	13.3	
2500 to 2999	570	53.9		5.6	28.9	11.6	
3000 to 3499	785	60.9		4.5	23.2	11.5	
3500 to 3999	486	61.7		5.1	20.8	12.3	
≥4000	76	69.7		1.3	17.1	11.8	
Schooling (yrs)***							<0.001****
0 to 4	141	25.5		21.3	44.7	8.5	
5 to 8	490	26.1		7.3	49.0	17.6	
9 to 11	1,059	66.6		2.8	17.3	13.3	
≥12	393	93.1		0.5	4.3	2.0	
Total	2,084	59.3		4.7	24.1	11.9	

MW: Minimum wage

* 66 interviewees classified themselves as yellow or indigenous

** Wald test for heterogeneity

*** From 2,084 female interviewees in 2004-5 inv

**** Test for linear tendency

Table 3. Crude and adjusted analysis for the effects of the independent variables on paternity in adolescence. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable	Crude analysis			Adjusted analysis*		
	RP	95% CI	p	RP	95% CI	p
Skin color			<0.001**			0.12**
White	1	-		1	-	
Black or Mixed	1.48	1.13; 1.87		1.23	0.94; 1.61	
Family income-1982 (MW)			<0.001***			<0.001***
≤1	8.99	2.23; 36.20		8.27	2.05; 33.38	
1.1 to 3	7.92	1.99; 31.59		7.55	1.89; 30.16	
3.1 to 6	3.54	0.85; 14.77		3.47	0.83; 14.50	
6.1 to 10	4.26	0.94; 19.32		4.23	0.93; 19.21	
>10	1	-		1	-	
Change in income (1982→2004-5)			<0.001***			<0.001***
Always poor	2.48	1.83; 3.38		2.36	1.70; 3.29	
Not poor → poor	2.20	1.60; 3.03		2.18	1.37; 2.70	
Poor → not poor	1.62	1.14; 2.30		1.54	0.78; 1.76	
Never was poor	1	-		1	-	
Birth weight (grams)			0.90***			0.47***
<2500	0.89	0.47; 1.72		0.72	0.37; 1.39	
2500 to 2999	1.02	0.62; 1.67		0.86	0.53; 1.42	
3000 to 3499	0.92	0.58; 1.47		0.83	0.52; 1.32	
3500 to 3999	0.92	0.57; 1.49		0.86	0.53; 1.39	
≥4000	1	-		1	-	
Schooling (yrs)			<0.001***			<0.001***
0 to 4	18.93	5.95; 60.19		15.84	4.64; 54.02	
5 to 8	16.66	5.35; 51.90		14.22	4.31; 46.94	
9 to 11	5.92	1.87; 18.70		5.18	1.57; 17.09	
≥12	1	-		1	-	

MW: Minimum wage

* Variables from the first level (skin color, family income in 1982) were adjusted between themselves and maintained in the model of analysis if $p < 0.2$. Change in income adjusted to skin color. Birth weight and schooling of young adults adjusted for skin color and family income in 1982.

** Wald test for heterogeneity

*** Test for linear tendency

skin color; this association, despite reduction after adjustments for socioeconomic variables, continued to be significant. The effect of the young women's birth weight on the probability of becoming a mother in adolescence disappeared in adjusted analysis.

In adjusted analysis, all the factors associated with maternity/paternity during the entire period of adolescence were maintained for early adolescence (from 11 to 15 years), but with substantially higher effects (data not shown).

DISCUSSION

Analysis of the occurrence of maternity/paternity among young adults from the 1982 birth cohort indicates that while a bit more than 75% of the men did

not have children before they were 23 years old, for women, this proportion was 60%. Furthermore, the results of this study indicate that women had children earlier than men and that maternity/paternity in adolescence was more common among people from lower socioeconomic strata. Maternity in adolescence occurred among almost a third of the young women, and for 4.7% of these, this experience was very early – before they were 16 years old.

The birth cohort studies conducted in Pelotas since 1982 indicate that the proportion of adolescents giving birth has increased from 15.4% in 1982 to 18.3% in 2004.¹ However, the decrease in births in the city due to the general decrease in fertility has resulted in a significant decrease in the absolute number of adolescent mothers in the past two decades – 921 in 1982 and 811 in 2004

Table 4. Crude and adjusted analysis of the effects of independent variables on maternity in adolescence. Pelotas. Southern Brazil, 1982 to 2004-5.

Variable	Crude analysis			Adjusted analysis*		
	PR	95% CI	p	PR	95% CI	p
Skin color			<0.001**			0.03**
White	1	-		1	-	
Black or Mixed	1.44	1.24; 1.67		1.18	1.02; 1.37	
Family income-1982 (MW)			<0.001***			<0.001***
≤1	10.54	4.48; 25.27		9.91	2.62; 16.12	
1.1 to 3	7.53	3.18; 17.86		7.20	2.07; 12.56	
3.1 to 6	4.68	1.93; 11.30		4.57	1.48; 8.98	
6.1 to 10	2.58	0.95; 7.01		2.55	0.85; 6.19	
>10	1	-		1	-	
Change in income (1982→2004-5)			<0.001***			<0.001***
Always poor	3.54	2.97; 4.22		3.43	2.85; 4.12	
Not poor → poor	2.95	2.45; 3.56		2.93	2.43; 3.53	
Poor → not poor	1.94	1.55; 2.44		1.89	1.50; 2.39	
Never was poor	1	-		1	-	
Birth weight (grams)			0.003**			0.08**
<2500	1.51	0.89; 2.58		1.26	0.75; 2.13	
2500 to 2999	1.88	1.15; 3.05		1.64	1.01; 2.65	
3000 to 3499	1.50	0.92; 2.44		1.42	0.88; 2.29	
3500 to 3999	1.41	0.86; 2.31		1.44	0.88; 2.35	
≥4000	1	-		1	-	
Schooling (yrs)			<0.001***			<0.001***
0 a 4	13.64	8.66; 21.49		11.53	7.06; 18.81	
5 a 8	11.65	7.46; 18.19		9.90	6.15; 15.94	
9 a 11	4.16	2.64; 6.56		3.67	2.29; 5.89	
≥12	1	-		1	-	

MW: Minimum wage

* The variables of the first level (skin color, family income in 1982) were adjusted among themselves and maintained in the model of analysis if $p < 0.2$. Changes in income were adjusted for skin color. Birth weight was adjusted for skin color and family income in 1982. Schooling of young adults was adjusted for skin color, family income and birth weight.

** Wald test for heterogeneity

*** Test for linear tendency

– despite the growth in the adolescent population. The specific rate of Brazilian fecundity among adolescents aged 15 to 19 years old has fallen 15% between 1996 and 2004, being that this reduction was even greater (23%) in Rio Grande do Sul – from 68.1/1000 in 1996 to 52.6/1000 in 2004.^a A reduction comparable to the latter was observed in the United States – 26% between 1991 and 2001 (from 62.2/1000 in 1991 to 45.9 in 2001).¹⁴

However, the disquieting fact is that, in Pelotas, the prevalence and the absolute number of mothers under 16 years of age has increased: this group was responsible for 1.1% of the births in 1982 and 2.7% of them in 2004. In absolute numbers, there were 65 mothers aged 11 to 15 years old in 1982 and this amount increased to 114 in 2004.

The results of this study refer to acknowledged maternity/paternity and not pregnancies, for many young women may have become pregnant and suffered a spontaneous or induced abortion that were not detected in the interview. Similarly, it is possible that many young males have not become aware or were not informed about a pregnancy or parity of their companions.

It is important to evaluate the racial differences in the reproductive history of the Brazilian population. The greater risk of pregnancy in adolescence among girls with black or mixed skin color, even after adjustments for the socioeconomic situation, may be real or may result from residual confusion, for adjusting the analysis only with respect to family income may not resolve the complexity of the social differences. In the

^a Ministério da Saúde. Datasus. Taxa específica de fecundidade. Brasília; 2000.

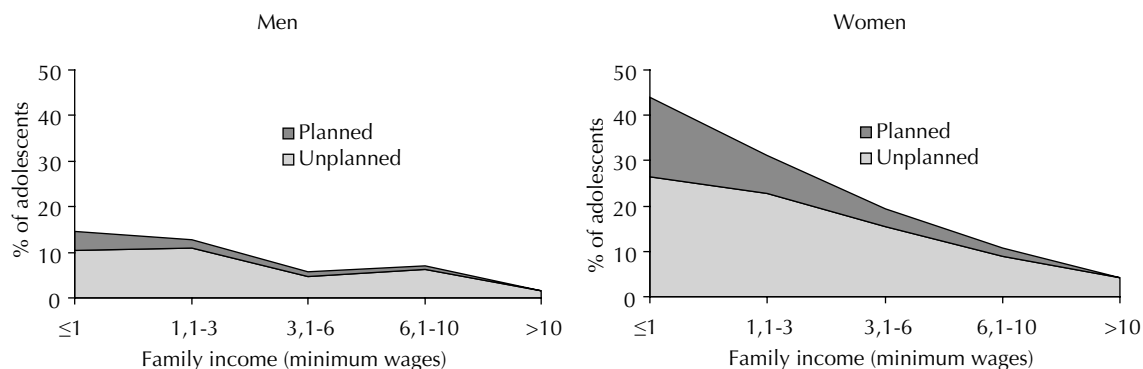


Figure. First pregnancy planned in adolescence according to family income in 1982. Pelotas, Southern Brazil, 1982 to 2004-5.

United States, adolescents with black skin color have better reproductive outcomes, presenting lower rates of infant mortality and low birth weight when compared to older Afro-Americans.^{7,8} However, the reproductive health of the black population begins to get worse as adult life commences early, as a possible consequence of the cumulative effect of social disadvantages.^{7,8}

Some authors suggest that individuals with low birth weights would be less likely to wed¹⁶ and that these girls present later menarche,¹¹ which could contribute to lower parity in adolescence. However, the crude analysis of this study indicates there is a greater parity among girls with low birth weights and, after adjustments for confusion factors, this association disappeared suggesting it was due to socioeconomic differences.

In this study, even among younger adolescents, there was an expressive proportion of individuals interviewed who stated they planned their pregnancies. Information on planned pregnancies may have been overestimated since some young parents may have considered the acceptance to be greater after their child was born. However, young adults with a better socioeconomic level and, consequently better schooling, practically did not report having planned pregnancies. Even among the poorer subjects of this study not having planned their

pregnancy was reported more frequently.

The results of this study confirm that low educational level and low family income are associated to maternity/paternity in adolescence. One possible explanation for this fact is that women with less schooling and unfavorable socioeconomic conditions may have less access to information and health services and, consequently, to contraceptive methods. However, it is also possible that the desire to have children while they are still adolescents may be greater in this social group for reasons related to personal or family, frequently conjugal, projects; the attempt to conquer status and the search for autonomy; or even the affirmation of reproductive capacities,^a that may be ascertained by the reports of having planned their pregnancies.

Among the diverse results presented, two have the potential to be utilized in public health programs. First, many pregnancies in adolescence are planned, particularly among the poorer strata. Second, the results indicate that it is more useful to monitor parity among adolescents from 11 to 15 years of age than among adolescents in general, for the temporal sequences may have opposing tendencies and it is among very young adolescents that greater risks are involved for both mother and child.

^a Gonçalves H. Aproveitar a vida: um estudo antropológico sobre valores, juventude e gravidez em uma cidade do interior [doctoral thesis]. Porto Alegre: UFRGS; 2004.

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