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# Education and work in the Pelotas birth cohort from 1982 to 2004-5, Southern Brazil

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## ABSTRACT

**OBJECTIVE:** To analyze the influence of biological and socioeconomic factors throughout life on entry into the university and insertion in the work force of young adults from the 1982 birth cohort.

**METHODS:** Longitudinal study of 5,914 births that took place in the city of Pelotas, Southern Brazil, in 1982. Data was collected by means of questionnaires applied on young adults when accompanying the 1982 cohort in 2004-5. Information was gathered concerning educational level and insertion in the labor market. Poisson Regression was utilized to study the effect of demographic and socioeconomic variables, as well as birth weight and maternal breastfeeding, on the outcomes.

**RESULTS:** On the average, these young adults had 9.4 ( $\pm$  3.1) years of schooling and 42% of them were attending school in 2004-5. One in five young adults had entered a university and approximately two thirds were working during the month prior to the interview. Entry in the university was determined by economic conditions. Furthermore, women's birth weight and breastfeeding among men influenced this outcome. Insertion in the labor market was more frequent among the poorer men, but this did not affect women's outcomes in this respect.

**CONCLUSIONS:** The low inclusion in the university and the need to enter the labor market among the poor families maintains a vicious circle that reproduces the dominant social hierarchy.

**DESCRIPTORS:** Adult. Educational Status. Work. Employment. Cohort Studies. Brasil.

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## INTRODUCTION

The association between maternal education and infant health has been observed in practically all societies. Each additional year in maternal schooling is associated to a 7 to 9% reduction in the mortality of children under five years of age.<sup>4</sup> It is postulated that the influence of maternal education on children's health is mediated by multiple mechanisms, such as the patterns of reproductive health, the economic advantages associated with education – such as improvements in income, pipe water, sanitation, housing conditions – and the better use of preventive and curative health services.<sup>4</sup>

Besides maternal education, other early factors may also affect physical and mental development, such as the father's schooling, family income during childhood, changes in income throughout life, and biological factors, such as birth weight and breastfeeding duration.<sup>7,20</sup> While some studies suggest the influence of birth weight and of growth during infancy on human capital,<sup>8,19</sup> revisions

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of observational studies have not been able to confirm the relation between breastfeeding and intelligence.<sup>3,10</sup> On the other hand, recent results from a randomized trial show strong evidence that exclusive and prolonged breastfeeding has an influence on the cognitive capacity of children.<sup>12</sup> According to Agostoni,<sup>1</sup> there is biological plausibility of the effects of long-chain fatty acids present in breast milk on the development of the brain.

Thus, the objective of this study was to analyze the influence of socioeconomic and early biological factors throughout life on entry into the university and insertion in the labor market among young people from the 1982 birth cohort.

## METHODS

In 1982, the three maternities in Pelotas were visited and all liveborns whose mothers lived in the urban area of Pelotas were included in a cohort study. Details on the 1982 birth cohort are published in other articles.<sup>2,16,18</sup>

Information on years of schooling and insertion in the labor market among the young adults belonging to the 1982 birth cohort were obtained by means of interviews in the most recent follow up, in 2004-5. Entry in the university and the labor market were considered dependent variables. Skin color was self-reported and followed the *Instituto Brasileiro de Geografia e Estatística's* (IBGE's) [Brazilian Institute of Statistics and Geography's] classification, and was presented as a dichotomic variable (White and Black or Mixed). Parents' schooling was classified in four categories; family income was distributed in five groups, organized according to the number of minimum wages obtained in 1982; and, changes in income during the period from 1982 to 2005 were also registered. Birth weight was classified in the following categories: <2,500g; 2,500 to 2,999g; 3,000 to 3,499g; 3,500 to 3,999 g and ≥4,000g). Entry in the university was related to duration of breastfeeding for each member of the cohort, measured in the first follow ups, when these young people were on the average, aged two to four years old.

Poisson regression was used to study the effects of independent variables on the outcomes and adjusted analysis was carried out considering a hierarchical model. According to this model, the socioeconomic variables (including skin color, income and parents' schooling) were considered as possible distal factors in the determination of the outcomes and included in the first level of analysis. In order to evaluate the effect of socioeconomic status throughout life, the variable change in income was constructed, based on information concerning family income in 1982 and 2004-5. The variable change in income was not adjusted for income when born, because the latter was used in the construction of the former. Interviewees were classified in the following categories in the variable change

in income – always poor (those that belonged to the lowest third portion of the cohort in terms of family income both in 1982 and in 2004-5); poor → not poor (belonging to lowest third in terms of family income in 1982 and shifting to the middle third or the upper third in 2004-5); not poor → poor (those that shifted from the middle or upper third in 1982 to the lowest third in 2004-5); and never poor (those that remained in the middle or upper third in terms of family income in 1982 and 2004-5).

The effects of birth weight and breastfeeding on the outcomes were included respectively on the second and third levels of analysis. Birth weight was adjusted to the socioeconomic variables that presented an association ( $p < 0.2$ ) with the outcomes and the effect of breastfeeding duration on entry in the university was also adjusted to birth weight.

Verbal informed consent was obtained from the children's guardians in the 1982-1986 phases of the study, as was common practice at the time, when an ethics committee did not exist in the Federal University of Pelotas. In the more recent phases, the Ethics in Research Committee of the University, affiliated to the *Conselho Nacional de Ética em Pesquisa (CONEP)* [National Council of Ethics in Research], approved the study and informed consent was obtained in written form from participants.

## RESULTS

When interviews were conducted with the 4,297 members of the cohort in 2004-5, the average values were 22.8 years ( $\pm 0.4$ ) of age and 9.4 years ( $\pm 3.1$ ) of schooling, being that it was 9.0 years of schooling ( $\pm 3.1$ ) for males and 9.8 years of schooling ( $\pm 3.1$ ) for females. At the time of the interview, 42% of the young adults were attending school; three fourths of those that did not study, expressed an intention to go back to school.

Among 75% of the young adults who had completed eight years of schooling, 53% had already completed 11 years of schooling. Those who had entered the university represented 19% of the interviewees and 7% of the interviewees reported they were attending some technical course. This was either a course directed towards professionalization or a preparatory course for a competitive professional examination. Another 5% of the interviewees were going to university entrance examinations' preparatory courses.

Table 1 shows the prevalences of entry in the university according to independent variables. There was a significant difference in all investigated variables. Entry in the university was more frequent among women, with differences in relation to skin color, and this outcome was more probable among white women interviewed.

**Table 1.** Prevalence of entry into the university among young adults according to demographic and socioeconomic variables as well as birth weight and breastfeeding duration. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable			Men		Women	
	n	%	n	%	N	%
Skin color <sup>*,**</sup>		p < 0.001 <sup>***</sup>		p < 0.001 <sup>***</sup>		p < 0.001 <sup>***</sup>
White	3,238	23.3	1658	19.9	1580	26.9
Black or Mixed	908	6.6	471	4.7	437	8.7
Family income-1982 <sup>**</sup> (MW)		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>
≤1	852	2.9	438	2.3	414	3.6
1.1 to 3	2126	10.1	1095	8.4	1031	11.8
3.1 to 6	800	30.6	417	23.3	383	38.6
6.1 to 10	252	55.6	130	48.5	122	63.1
> 10	244	81.6	123	76.4	121	86.8
Maternal schooling (yrs) <sup>**</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>
0 to 4	1,407	3.6	719	3.3	688	3.9
5 to 8	1,826	12.2	956	9.2	870	15.4
9 to 11	473	33.0	239	28.0	234	38.0
12 or more	584	67.8	295	60.0	289	75.8
Paternal schooling (yrs) <sup>*****</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>
0 to 4	1,032	5.6	523	4.4	509	6.9
5 to 8	1,695	12.2	862	9.3	833	15.2
9 to 11	460	32.4	240	25.0	220	40.5
12 or more	512	65.2	269	59.5	243	71.6
Change in income (1982 → 2004-5) <sup>**</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>
Always poor	708	1.4	335	2.1	373	0.8
Not poor → poor	714	8.3	360	7.4	374	9.1
Poor → not poor	665	4.7	340	3.6	305	5.9
Never poor	2,209	32.8	1178	26.4	1031	40.2
Birth weight (g) <sup>**</sup>		p = 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>
< 2500	301	15.0	136	12.5	165	17.0
2,500 to 2,999	1,021	13.0	451	11.3	570	14.4
3,000 to 3,499	1,634	20.0	849	15.7	785	24.6
3,500 to 3,999	1,098	24.6	612	20.4	486	29.8
≥ 4,000	241	21.2	165	18.2	76	27.6
Breastfeeding (months) <sup>**</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>****</sup>		p < 0.001 <sup>***</sup>
< 1.0	900	14.6	483	9.7	417	20.1
1.0 to 2.9	1,074	16.7	545	14.9	529	18.5
3.0 to 5.9	954	21.6	485	16.5	469	26.9
6.0 to 8.9	394	27.4	203	23.6	191	31.4
9.0 to 11.9	159	35.2	83	41.0	76	28.9
≥ 12.0	680	17.8	335	16.4	345	19.1
Total <sup>*****</sup>	4,296	19.2	2,213	16.1	2,083	22.5

MW: Minimum wages

\* 150 interviewees classified themselves as yellow or indigenous

\*\* Among 4,297 interviewees in 2004-5 information was lacking for up to 23 people (0.5% of the interviewees).

\*\*\* Chi-square test for heterogeneity

\*\*\*\* Chi-square test for linear tendency

\*\*\*\*\* For this variable alone information was lacking for 14% of the interviewees

\*\*\*\*\* For one of the interviewees in 2004-5 there was no information concerning schooling

**Table 2.** Crude and adjusted analysis of the effects of independent variables on entry into the university. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable	Men				Women			
	Crude		Adjusted*		Crude		Adjusted*	
	PR	95% CI	PR	95% CI	PR	95% CI	PR	95% CI
Skin color		p <0.001**		p = 0.01**		p <0.001**		p = 0.07**
White	1	-	1	-	1	-	1	-
Black or Mixed	0.23	0.15;0.36	0.58	0.37;0.90	0.32	0.24;0.44	0.76	0.57;1.02
Maternal schooling (yrs)		p <0.001***		p <0.001***		p <0.001***		p <0.001***
0 to 4	0.06	0.04;0.08	0.24	0.15;0.40	0.05	0.04;0.08	0.21	0.13;0.34
5 to 8	0.15	0.12;0.19	0.43	0.31;0.58	0.20	0.17;0.24	0.54	0.43;0.67
9 to 11	0.46	0.37;0.58	0.79	0.62;1.00	0.50	0.42;0.60	0.75	0.62;0.90
≥12	1	-	1	-	1	-	1	-
Paternal schooling (yrs)		p <0.001***		p <0.001***		p <0.001***		p <0.001***
0 to 4	0.07	0.05;0.11	0.34	0.22;0.55	0.10	0.07;0.13	0.47	0.32;0.68
5 to 8	0.16	0.12;0.20	0.44	0.33;0.58	0.21	0.18;0.25	0.61	0.49;0.77
9 to 11	0.42	0.33;0.53	0.75	0.58;0.95	0.56	0.47;0.68	0.91	0.76;1.08
≥12	1	-	1	-	1	-	1	-
Family income-1982 (MW)		p <0.001***		p <0.001***		p <0.001***		p <0.001***
≤ 1	0.03	0.01;0.06	0.23	0.11;0.48	0.04	0.02;0.07	0.21	0.11;0.39
1.1 to 3	0.11	0.09;0.14	0.49	0.36;0.67	0.14	0.11;0.16	0.45	0.34;0.59
3.1 to 6	0.30	0.25;0.37	0.70	0.56;0.87	0.45	0.39;0.51	0.87	0.73;1.02
6.1 to 10	0.63	0.52;0.78	0.81	0.66;0.99	0.73	0.62;0.85	0.93	0.80;1.08
>10	1	-	1	-	1	-	1	-
Change in income (1982 → 2004-5)		p <0.001***		p <0.001***		p <0.001***		p <0.001***
Always poor	0.08	0.04;0.17	0.46	0.21;0.99	0.02	0.01;0.06	0.05	0.01;0.20
Not poor → poor	0.14	0.08;0.24	0.65	0.35;1.20	0.15	0.09;0.23	0.40	0.23;0.70
Poor → not poor	0.28	0.19;0.41	0.56	0.39;0.82	0.23	0.16;0.31	0.38	0.27;0.52
Never poor	1	-	1	-	1	-	1	-
Birth weight (grams)		p <0.001***		p = 0.23***		p <0.001***		p <0.001***
<2,500	0.69	0.40;1.19	0.89	0.54;1.41	0.61	0.37;1.01	0.69	0.45;1.05
2,500 to 2,999	0.62	0.41;0.94	0.98	0.67;1.43	0.52	0.34;0.79	0.60	0.42;0.87
3,000 to 3,499	0.86	0.78;1.61	1.07	0.77;1.50	0.89	0.61;1.31	0.81	0.58;1.13
3,500 to 3,999	1.12	0.60;1.23	1.18	0.85;1.63	1.08	0.73;1.59	0.90	0.64;1.27
≥ 4,000	1	-	1	-	1	-	1	-
Breastfeeding (months)		p <0.001***		p = 0.001***		p <0.001***		p = 0.89***
<1.0	0.59	0.41;0.85	0.60	0.43;0.82	1.05	1.00;2.29	1.04	0.80;1.33
1.0 to 2.9	0.91	0.66;1.24	0.85	0.65;1.11	0.97	1.21;2.22	1.00	0.79;1.28
3.0 to 5.9	1.00	0.73;1.38	0.78	0.59;1.02	1.40	1.08;1.83	1.11	0.89;1.38
6.0 to 8.9	1.44	1.02;2.04	0.83	0.62;1.11	1.64	0.73;1.28	1.05	0.81;1.36
9.0 to 11.9	2.50	1.75;2.55	1.05	0.78;1.40	1.51	0.79;1.41	1.13	0.82;1.57
≥ 12.0	1	-	1	-	1	-	1	-

MW: Minimum wage

\* The variables of the first level (skin color, maternal schooling, paternal schooling and family income in 1982) were adjusted among themselves and maintained in the model of analysis if  $p < 0.2$ . Change in income was adjusted for skin color. Birth weight was adjusted for skin color, maternal and paternal schooling and family income in 1982. Breastfeeding was adjusted for skin color, maternal schooling, family income and birth weight.

\*\* Wald test for heterogeneity

\*\*\* Wald test for linear tendency

A direct association between entry into the university and socioeconomic conditions was observed, being evaluated in terms of parents' schooling, family income and changes in family income during the period from 1982 to 2004-5. Differences in the prevalences of entry in the university were observed between the extreme categories of the socioeconomic variables. Entry in the university also differed according to birth weight

and duration of breastfeeding among interviewees: the prevalence of entry in the university was higher among those who weighed 3,000g or more when they were born, or who were breastfed for six to 11 months.

The results of Poisson Regression analysis are presented in Table 2. In order to maintain consistency with all other articles of the Supplement, the reference group

**Table 3.** Prevalence of labor during the previous month among young adults according to demographic and socioeconomic variables as well as birth weight. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable			Men		Women	
	n	%	n	%	n	%
Skin color**		p = 0.30***		p = 0.35***		p = 0.57***
White	3238	64.6	1658	76.8	1580	51.8
Black or Mixed	908	64.3	555	78.7	503	50.3
Family income-1982 (MW)**		p < 0.001***		p < 0.001****		p = 0.001***
≤ 1	852	61.2	438	77.4	414	44.0
1.1 to 3	2126	67.9	1095	81.2	1031	53.7
3.1 to 6	800	66.5	417	76.0	383	56.1
6.1 to 10	252	60.3	130	70.0	122	50.0
>10	244	49.2	123	54.5	121	43.8
Maternal schooling (yrs)**		p < 0.00***		p < 0.001****		p = 0.001***
0 to 4	1407	63.5	719	80.0	688	46.2
5 to 8	1826	68.3	956	79.8	870	55.7
9 to 11	473	63.6	239	72.8	234	54.3
≥12	584	57.2	295	65.8	289	48.4
Paternal schooling (yrs)*****		p < 0.001***		p < 0.001****		p = 0.23***
0 to 4	1032	64.9	523	80.3	509	49.1
5 to 8	1695	67.1	862	79.9	833	53.8
9 to 11	460	64.8	240	76.7	220	51.8
≥12	512	55.9	269	63.2	243	47.7
Change in income (1982 → 2004-5)**		p < 0.001****		p < 0.00***		p < 0.001****
Always poor	708	51.1	335	72.2	373	32.2
Not poor → poor	714	54.6	340	72.9	374	38.0
Poor → not poor	665	75.8	360	85.3	305	64.6
Never poor	2209	69.1	1178	77.5	1031	59.5
Birth weight (g)**		p = 0.001****		p = 0.14***		p = 0.05****
<2,500	301	57.5	136	69.9	165	47.3
2,500 to 2999	1021	63.0	451	79.2	570	50.2
3,000 to 3,499	1634	65.5	849	78.7	785	51.2
3,500 to 3,999	1098	65.8	612	75.8	486	52.3
≥ 4,000	241	71.4	165	76.4	76	60.5
Total*****	4296	64.8	2213	77.3	2083	51.5

MW: Minimum wage

\* 150 interviewees classified themselves as Yellow or Indigenous

\*\* Among 4,297 interviewees in 2004-5, information was lacking for up to 23 people (0.5% of the interviewees).

\*\*\* Chi-square test for heterogeneity

\*\*\*\* Chi-square test for linear tendency

\*\*\*\*\* This was the only variable for which information was lacking for 14% of the interviewees

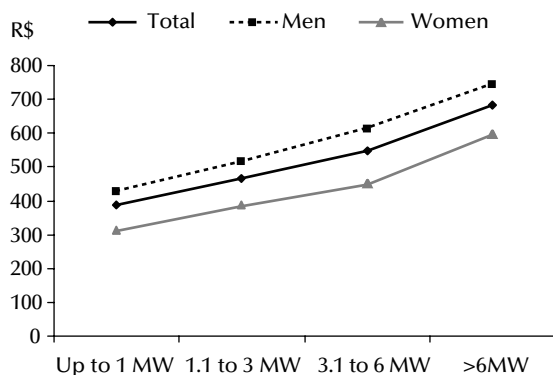
\*\*\*\*\* For one of the interviewees there was no information on work in 2004-5.

is that which has the best prognosis, which results in prevalence ratios inferior to the unity. The majority of the effects observed in the crude analysis were maintained in the adjusted analyses, except for the variables skin color and breastfeeding among women and birth weight among men. When the variables were analyzed together, the effects decreased. Maternal schooling was more associated to women's schooling than to men's (p for interaction <0.001) and paternal schooling had an inverse effect (p for interaction =0.001).

Entry into the university among men who were never poor was twice as high as among those that were poor during the period between 1982 and 2004-5. As to the women, this difference was twenty times greater. The interaction between sex and changes in income was significant (p<0.001). When the socioeconomic variables were controlled in the analysis, birth weight had no effect on entry into the university among the men, but direct association was observed among the women. On the other hand, while the effect of breastfeeding was not observed on women in the adjusted analysis, entry into the university was less frequent among men who had been weaned earlier.

The second outcome analyzed was entry into the labor market. Approximately two thirds of the interviewees (2,782/4,297, or 64.8%) were working the month before the interview. Among those that were not working, 742 (49%) stated they were looking for jobs. The main reasons given for not working included studying, pregnancy or taking care of children. More men than women were working – respectively, 77.2% and 51.5%. There was also a greater proportion of men than women currently looking for a job – 55.1% and 46.0%, respectively.

Prevalences of work according to demographic and socioeconomic variables are presented in Table 3, with no differences as to skin color. Among the men, entry in the labor market was inversely proportional to



**Figure.** Average monthly wage (MW) of the young adult in 2004-5 according to family income (in Reais, R\$) in 1982. Pelotas, Southern Brazil, 1982 to 2004-5.

family income in 1982 and to parents' schooling. The proportion of women who had entered the labor market also varied according to family income and maternal schooling, however, this association was not linear, being higher among the intermediate groups. Labor was more frequent among men and women in the group whose economic status had become better in the period between 1982 and 2004-5, which may be partially or totally explained by their own contribution to current family income. There was also a direct association with birth weight among the women, although this did not occur among the men.

In the adjusted model (Table 4), the inverse associations between work and paternal schooling for men remained significant. After adjusting for parents' schooling, no association with family income in 1982 was observed; however there was a greater proportion of young adult men working in the group whose family income varied from 1.1 to 6.0 minimum wages per month. In terms of the groups of change in income, entry in the labor market was lower among those men who were classified as poor in 2004-5, independently of their economic situation when they were born. Birth weight was not associated to the proportion of men working.

No association was observed among the women between entry in the labor market and skin color, parents' schooling or family income. However, in the same manner as occurred among the men, the chance of working decreased among women classified in the lowest income group in 2004-5, whether or not they were poor in 1982. Nevertheless, women's entry in the labor market was directly proportional to their birth weight. This result maintained itself within the threshold of significance (p=0.04), even when adjusted for socioeconomic variables.

Analysis of the association between family income in 1982 and women's labor repeated itself after excluding those women who had already had children, since the higher frequency of maternity among the poorest women could stop them from participating in the labor market. However, the results were not affected substantially by this restriction, since the highest rates of work among women were found throughout the study among those who were in the intermediate income categories when they were born.

Considering only those young adults that were working the month before the interview, the average income reported was R\$ 488.00, varying in a manner that was directly proportional to family income in 1982 (Figure). The two last categories of income were grouped together by the smallest number of people classified in each of the last two groups. Thus, among the young adults who belonged to the poorest families in 1982 – whose family income amounted less than one minimum salary – the average income earned was

**Table 4.** Crude and adjusted analysis of the effects of independent variables on labor in the previous month. Pelotas, Southern Brazil, 1982 a 2004-5.

Variable	Men				Women			
	Crude		Adjusted*		Crude		Adjusted*	
	PR	95% CI	PR	95% CI	PR	95% CI	PR	95% CI
Skin color		p = 0.74**		p = 0.70**		p = 0.55**		p = 0.84**
White	1	-	1	-	1	-	1	-
Black or Mixed	1.01	0.95;1.07	0.99	0.93;1.05	0.97	0.87;1.07	0.99	0.88;1.11
Maternal schooling (yrs)		p<0.001***		p = 0.07***		p = 0.27***		p = 0.12***
0 to 4	1.22	1.11;1.33	1.07	0.95;1.20	0.95	0.83;1.10	0.91	0.74;1.11
5 to 8	1.21	1.11;1.33	1.04	0.94;1.17	1.15	1.01;1.31	1.05	0.88;1.25
9 to 11	1.11	0.99;1.24	0.98	0.86;1.11	1.12	0.95;1.32	1.01	0.84;1.23
≥12	1	-	1	-	1	-	1	-
Paternal schooling (yrs)		p<0.001***		p = 0.04***		p = 0.80***		p = 0.26***
0 to 4	1.27	1.15;1.41	1.13	1.01;1.27	1.03	0.88;1.21	1.09	0.89;1.33
5 to 8	1.26	1.15;1.39	1.14	1.03;1.27	1.13	0.97;1.30	1.11	0.93;1.33
9 to 11	1.21	1.08;1.36	1.12	1.00;1.26	1.09	0.90;1.30	1.05	0.86;1.28
≥12	1	-	1	-	1	-	1	-
Family income-1982 (MW)		p<0.001***		p = 0.06**		p = 0.003**		p = 0.09**
≤ 1	1.42	1.20;1.68	1.22	0.99;1.49	1.00	0.80;1.26	1.00	0.74;1.35
1.1 to 3	1.49	1.26;1.76	1.29	1.06;1.57	1.23	0.99;1.51	1.18	0.89;1.55
3.1 to 6	1.40	1.18;1.65	1.26	1.04;1.53	1.28	1.03;1.60	1.22	0.93;1.59
6.1 to 10	1.29	1.06;1.56	1.22	1.00;1.50	1.14	0.87;1.49	1.15	0.86;1.55
>10	1	-	1	-	1	-	1	-
Change in income (1982→2004-5)		p<0.001***		p = 0.001***		p = 0.74***		p<0.001***
Always poor	0.64	0.46;0.73	0.85	0.78;0.92	0.93	0.87;1.00	0.50	0.43;0.60
Not poor → poor	0.54	0.46;0.63	0.88	0.81;0.95	0.94	0.88;1.01	0.62	0.54;0.71
Poor → not poor	1.09	0.99;1.20	0.99	0.93;1.06	1.10	1.04;1.16	1.02	0.91;1.14
Never poor	1	-	1	-	1	-	1	-
Birth weight (grams)		p = 0.99***		p = 0.52***		p = 0.05***		p = 0.07***
<2,500	0.91	0.80;1.05	0.91	0.79;1.05	0.78	0.61;1.00	0.78	0.61;1.00
2,500 to 2,999	1.04	0.94;1.14	1.01	0.91;1.12	0.83	0.68;1.01	0.83	0.68;1.02
3,000 to 3,499	1.03	0.94;1.13	1.00	0.91;1.10	0.85	0.70;1.03	0.86	0.70;1.03
3,500 to 3,999	0.99	0.90;1.09	1.00	0.90;1.10	0.88	0.72;1.08	0.88	0.72;1.07
≥ 4,000	1	-	1	-	1	-	1	-

MW: Minimum wage

\* The variables of the first level (skin color, maternal schooling, paternal schooling and family income in 82) were adjusted among themselves and maintained in the model of analysis if  $p < 0.2$ . Change in income was adjusted for skin color. Birth weight was adjusted for skin color, maternal and paternal schooling and family income in 1982. Breastfeeding was adjusted for skin color, maternal schooling, family income and birth weight.

\*\* Wald test for heterogeneity

\*\*\* Wald Test for linear tendency

R\$ 386.00. Analyzing data according to sex, the average value received by the poorest men was R\$ 426.00 and among the women it was R\$ 314.00. In the group with the highest income, the average salary of the young adults was R\$ 682.00 and, although the absolute difference between men (R\$ 744.00) and women (R\$ 597.00) was greater, the relative difference was greater among the poorest group.

## DISCUSSION

The average level of education found in this study was 9.4 years of schooling, being higher than the average found in 1998<sup>14</sup> for the Brazilian population aged 15 years and over (5.9 years of schooling). Data from the *Pesquisa Nacional por Amostra de Domicílio (PNAD)* [National Survey by Household Sample] from the year 2002 shows an average schooling of 6.2 years for the

Brazilian population aged ten years and older as a whole and, an average of 6.7 years of schooling when considering the State of Rio Grande do Sul alone.<sup>a</sup>

As to the socioeconomic variables, social inequities with respect to entry into the university were evident. Furthermore, it was observed that, even when adjusted by socioeconomic factors, the inclusion of young adults of both sexes with black skin color was lower than their white counterparts. The reduction of this effect in adjusted analysis suggests that the lower rate of entry of young adults with black skin color in the university may be partially explained by socioeconomic factors, since black or mixed families tend to be poorer and to have less schooling than the white families. However, the possibility of residual confounding due to socioeconomic factors not included or inadequately accounted for in the analysis exists. On the other hand, it is possible that these results are due in part to characteristics of the current educational system.<sup>5,6</sup> Our findings with respect to the lower rate of entry of blacks in the university, irrespective of their socioeconomic status, reminds us to the issue of racial quotas, adopted currently by many Brazilian universities. Although approximately 30% of the Brazilian students aged 18 to 24 years are in the universities, these proportions vary with respect to skin color from 46% among White and 14% among Black or Mixed young adults.<sup>a</sup> This difference may also be partially explained by the elevated proportion of Black or Mixed skin colored students aged 18 to 24 years old that are still studying in elementary or junior high school, since the lower entry of these in the university is not due only to the delay in terminating the previous stages of formal schooling.<sup>a</sup>

The results according to which young adults belonging to families with higher incomes and more years of schooling have higher rates of entry into the university reinforce the concepts of economic and cultural capital.<sup>b</sup> The latter proposes that the greater the economic capital of the families, the greater will be their demand for their children's education. At the same time, the educational resources of the family or cultural capital – measured in terms of their parents schooling – produce what is denominated an “educational climate”, which favors the education of their children.<sup>b</sup>

The United Nations Development Millennium Goals for the year 2015, stipulate that all children should complete junior high school.<sup>b</sup> Acknowledging the importance of education for improving the quality of life, it is disquieting that a middle sized city, in a

state considered by UNESCO as the one with the best educational indicators in Brazil,<sup>c</sup> one in four young adults aged 23 years old has not completed junior high school, considered the basic educational cycle in the school system. The fact that performance on the part of young adults belonging to socially underprivileged families is worse is even more concerning.

Associations between birth weight, cognitive function and academic performance were also found in other birth cohorts, such as the classic study of English children born in 1946 and accompanied until they were adults.<sup>13</sup> These findings show the importance of preventing situations that increase the risk of being born with insufficient weight. Among the well-known risk factors are cigarette smoking during pregnancy and infections, particularly those of the urinary tract.<sup>11,15</sup>

The current finding of a direct association between breastfeeding duration and entry into the university is in keeping with previous results from this same cohort, when subjects were 18 years old. At that time, the outcome used was the total number of years of schooling completed by the adolescents.<sup>17</sup> In both analyses, the results were observed for men after controlling for a series of confounding factors. In the present study, an association was observed for women, in the crude analysis, which disappeared after adjustment for confounding factors. The reasons for the differences in results for males and females are not clear. A recent meta-analysis suggests breastfeeding has a beneficial effect on intellectual performance,<sup>7</sup> but another revision<sup>9</sup> contests that this is a causal effect.

As to entry of young adults in the labor market, although women had more schooling than men, they received lower salaries in the labor market, regardless of the socioeconomic status of their families.

The results of the current study, as well as those presented in this Supplement, indicate a path through which maintenance of the present social structure and poverty is established in the city of Pelotas. Even though the demand for a job in the labor market is greater among young adults from the lower classes, the latter tend to obtain less qualified work and lower income, since one of the major determinants of the type of work, and, consequently, of income, is the professional qualification that results from schooling. Since the major reason alleged for not studying is, precisely, the need to work, a vicious cycle is created that leads to the reproduction of the dominant social hierarchy.

<sup>a</sup> Instituto Brasileiro de Geografia e Estatística. Síntese dos Indicadores Sociais – 2004. Rio de Janeiro; 2005

<sup>b</sup> Ireland VE, Charlot B, Gomes C, Gusso D, De Carvalho LCR, Fernandes M, et al. Repensando a escola: um estudo sobre desafios de aprender, ler e escrever. Brasília: UNESCO/MEC/INEP; 2007

<sup>c</sup> Programa das Nações Unidas para o Desenvolvimento. Objetivos de desenvolvimento do milênio [internet]. 2004. [cited 2006 Oct 23]. Available from: [http://www.pnud.org.br/odm/objetivo\\_2](http://www.pnud.org.br/odm/objetivo_2)



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