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Prevalence and early determinants of common mental disorders in the 1982 birth cohort, Pelotas, Southern Brazil

ABSTRACT

OBJECTIVE: To estimate the prevalence of common mental disorders and assess its association with risk factors in a cohort of young adults.

METHODS: Cross-sectional study nested in a 1982 birth cohort study conducted in Pelotas, Southern Brazil. In 2004-5, 4,297 subjects were interviewed during home visits. Common mental disorders were assessed using the Self-Report Questionnaire. Risk factors included socioeconomic, demographic, perinatal, and environmental variables. The analysis was stratified by gender and crude and adjusted prevalence ratios were estimated by Poisson regression.

RESULTS: The overall prevalence of common mental disorders was 28.0%; 32.8% and 23.5% in women and men, respectively. Men and women who were poor in 2004-5, regardless of their poor status in 1982, had nearly 1.5-fold increased risk for common mental disorders ($p \leq 0.001$) when compared to those who have never been poor. Among women, being poor during childhood ($p \leq 0.001$) and black/mixed skin color ($p=0.002$) increased the risk for mental disorders. Low birth weight and duration of breastfeeding were not associated to the risk of these disorders.

CONCLUSIONS: Higher prevalence of common mental disorders among low-income groups and race-ethnic minorities suggests that social inequalities present at birth have a major impact on mental health, especially common mental disorders.

DESCRIPTORS: Adult. Symptoms Psychic. Anxiety Disorders. Depressive Disorder. Cohort Studies. Brazil.

INTRODUCTION

Common mental disorders (CMD) comprise a group of diseases characterized by non-psychotic depressive symptoms, anxiety, and somatic complaints affecting people's daily activities.[11]

The prevalence of mental disorders in young adults is high and may be as high as 25–40%,[19] possibly because most psychiatric disorders occur at higher rates during early adulthood.[12,18] Population-based studies conducted in Brazil have estimated a prevalence of CMD in adolescents and adults of 36.0% in the Northeastern[7] and 17.0% in the Southeastern region.[17] In Southern Brazil, the city of Pelotas showed a prevalence of CMD of 28.8%[20] in adolescents, 28.5% in adults,[8] and 22.7% in those aged 15 or more.[15]

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Cross-sectional studies have evidenced CMD are more common in women,[17] the Black,[7] the poor,[8,15] the unemployed,[17] smokers,[8,20] chronic patients,[8] people with poor social support[7] or who have experienced stressful events,[15] who are poorly educated,[17] or children of poorly educated mothers.[20]

Longitudinal studies have shown the impact of early risk factors such as poverty during childhood,[10] low birth weight, and intrauterine growth retardation[21,25] on depression in adults. The etiology of mental disorders was first attributed to emotional trauma during childhood[9] or a dysfunctional mother-child relationship,[5] and more recently to fetal[21] and genetic[6] factors. It is crucial to identify predisposing factors of mental disorders during childhood for better understanding their etiology and planning mental health policies.

Few studies have investigated the prevalence of CMD in specific age groups and factors associated through a prospective approach. Thus, the objective of the present study was to estimate the prevalence of CMD in 23-year-old young adults and to assess its association with sociodemographic, perinatal, and environmental risk factors present in early life.

METHODS

Cross-sectional study nested in a 1982 birth cohort study conducted in the city of Pelotas, Southern Brazil.[23] Throughout the year of 1982, three maternity hospitals in Pelotas were visited every day and the mothers of all 6,011 newborns, living in the urban area, were interviewed in the perinatal study. The original cohort comprised 5,914 liveborn infants. Of these, 46 were born at home. From 1982, there have been several follow-ups and the detailed methods are published elsewhere.[2,23]

Between October 2004 and August 2005, 4,297 subjects were interviewed during home visits. Adding to that 282 deaths identified, the followed-up rate of the cohort was 77.4%. Follow-up was higher in subjects with intermediate income at birth but there was no difference of gender, birth weight, and skin color. Of these 4,297 subjects, 12 did not answer the questionnaire on CMD: seven had mental retardation, three had severe mental disorder, one was deaf and one was lost to follow-up, making a total of 4,285 subjects. For the assessment of CMD in young people the Self-Report Questionnaire (SRQ-20) was applied.[16] The SRQ-20 is a screening tool for common mental disorders (formerly known as minor psychiatric disorders) that investigates non-psychotic symptoms in the month prior to the interview, especially in depression and anxiety. It comprises four questions about physical symptoms and 16 questions about emotional symptoms with "yes/no" answer. Based on the recommendations of the instrument's validation study in Brazil,[16] individuals with CMD were those with eight or more positive answers among women, and six or more positive answers among men. The World Health Organization (WHO) recommends the application of this instrument in community-based studies in developing countries.[16] In the present study, the SRQ-20 was self-administered in young population studied.

Sociodemographic and health-related variables were collected from the perinatal questionnaire administered to the mothers in the maternity hospital in 1982.[23] Data was also collected during home interviews in 1983, 1984, and 1986.[23] The following sociodemographic variables were considered potential risk factors of CMD: self-referred skin color (white and black or mixed); maternal schooling; family income in 1982 (in monthly minimum wages); and income change. Income change was divided into: always poor (equivalent to the lowest tertile of family income in 1982 and 2005); poor → non-poor (lowest tertile in 1982 and second or third tertile in 2005); non-poor → poor (second or third tertile in 1982 and lowest tertile in 2005); never poor (second or third tertile in 1982 and 2005). Asians (1.7%) and Indigenous (1.8%) were excluded from the analyses. The following health-related variables were considered potential risk factors: birth weight; breastfeeding (in full months); and maternal CMD. They were assessed in a subsample of 1,013 mothers interviewed in 2001 using the SRQ-20 with a cutoff value of eight symptoms for defining CMD.[16]

Gender-specific analyses were performed. In the descriptive analysis, prevalences of CMD and confidence intervals were estimated using the chi-square test and linear trend for comparison of proportions. Poisson regression was used in both bivariate and multivariable analysis with robust adjustment of variance for estimating prevalence ratios when the outcome prevalence was higher than 10%.[3] A three-level hierarchical model was designed. The variables skin color, maternal schooling, and family income at birth were included in the first level; birth weight in the second level; and breastfeeding in the third level. A second model included income change between 1982 and 2004–5 replacing the variable income. The variable maternal CMD was not included in the model due to the small number of mothers assessed. In the final model only those variables with $p<0.20$ remained. All statistical analyses were performed using Stata program.

Verbal informed consent was obtained from parents or guardians of the children during the study period 1982–1986 as it was required at that time when Universidade Federal de Pelotas did not have an ethics committee. More recently, the study was approved by the Research Ethics Committee, affiliated to the National Research Ethics Council (CONEP), and written informed consent was obtained from all subjects.

RESULTS

The prevalence of CMD was 28.0% (26.7; 29.4) in the cohort studied, 32.8% (30.8; 34.8) in women and 23.5% (21.8; 25.3) in men.

In the crude analysis, the prevalences were significantly higher in both men and women: black or mixed; low family income at birth; and those who have been poor since birth or have become poor over a 23-year period. Among women, CMD was also associated to low birth weight, maternal schooling, and maternal CMD (Table 1).

The analysis adjusted for confounders, the association between skin color and CMD among men disappeared after controlling for family income. Among women, the same was seen after adjusting low birth weight and maternal schooling for sociodemographic factors. Socioeconomic condition over time was the single variable that remained significantly associated to the outcome in both men and women: poor subjects in 2004–5, irrespective of their low socioeconomic status during childhood, were 1.5-fold more likely to have CMD when compared to those who have never been poor (Tables 2 and 3).

Among women, skin color and income at birth also showed an association with CMD (Table 3). Low birth weight and length of breastfeeding did not show any association with CMD in both men and women. As for the mother's mental health, in the adjusted analysis maternal CMD remained associated as a risk factor in women only.

DISCUSSION

The prevalence of CMD was high (28.0%) in the present study. In a population-based study conducted in the city of Pelotas in 1994 using the same instrument and cutoff values, a lower prevalence (21.7%) was found in subjects aged 15–34.[15] But it is possible that the inclusion of both adolescents and adults in the same category in this study contributed to a lower prevalence of CMD. The present study is not comparable to other Brazilian studies based on SRQ-20 due to different recall time and cutoff values. Besides, few studies have investigated well-defined age groups and overall prevalences were estimated in a wide age range, from adolescents to elderly.

A limitation of the present study is the application of SRQ-20. Despite its high sensitivity and specificity, this is a screening rather than a diagnostic instrument. In addition, the study covered individuals born between January to December 1982 in the city of Pelotas and, therefore, the results may not be generalized to other populations living in different areas, and may be limited to the period over which the study was conducted. In contrast, the prospective study design with long-term follow-up is innovative in studies investigating risk factors for mental disorders in low- and middle-income countries and allows inferences on the direction of causal relationships.

High prevalence of CMD in young adults was an expected finding. The New Zealand Dunedin Multidisciplinary Health and Development Study investigated mental disorders in the same subjects at the ages of 21, 26, and 32 years. They found higher prevalences of most disorders at the ages of 21 and 26 with a decline at the age of 32.[18] Moreover, epidemiological studies with broad age groups reported higher prevalences of mental disorders in older adolescents and young adults than in older adults.[12,24] A study coordinated by the World Health Organization (WHO) and carried out in several countries including Brazil between 1990 and 1996 reported higher prevalence of mental disorders listed in the Diagnostic and Statistical Manual of Mental Disroders[1] in people aged 18–24 years.[24] The US National Comorbidity Survey (NCS) performed between 1990–1992 studied individuals aged 15–54 and found higher prevalence of psychiatric disorders in those aged 15–24.[12]

Consistent with other previous studies, the estimated prevalence of CMD in the present study was higher in women.[8,15] Women have higher prevalences of depression and anxiety in the adult age, the two main groups of symptoms assessed by the SRQ-20.[12,24] In addition, false-negative cases in the mental health screening were more likely seen in men.[16] This classification error can occur because: 1) men usually associate disease to weakness;[16] 2) they tend to express less their anxieties and feelings of sadness than women;[16] and 3) they may find it harder to report their emotional symptoms during an interview.[15]

In the present study, the cohort studied from childhood showed higher prevalence of CMD in those who were currently poor, irrespectively of their previous socioeconomic condition, which may suggest that mental health is more strongly determined by people's current condition. In contrast, among women, family income at birth remained associated to CMD even after adjusting for current family income.

Cross-sectional studies conducted in Brazil[7,17] and in several countries[12,24] evidenced an association between poverty and CMD. However, longitudinal studies investigating poverty during childhood and CMD are less consistent.[18] Yet the association between poverty during childhood and psychiatric outcomes in adult age has been reported in cohort studies.[10,18] In the Dunedin Study, children of low-income families showed increased risk of drug dependence at the age of 32.[18] The US Providence National Collaborative

Table 1. Estimated prevalence of common mental disorders according to sociodemographic, perinatal, and environmental variables. Pelotas, Southern Brazil, 1982 to 2004–5.

Variable	n	%	Men		Women	
			n	%	n	%
Skin color*.**	<0.001***		0.005***		<0.001***	
White	3229	25.9	1651	21.9	1575	30.0
Black or Mixed	906	33.7	469	26.9	435	41.1
Maternal schooling (years)**	<0.001****		0.10****		<0.001****	
0–4	1402	31.7	716	25.8	684	37.9
5–8	1822	27.8	952	22.8	869	33.3
9–11	473	24.1	238	20.6	233	27.9
≥12	582	22.9	294	22.1	288	23.6
Family income in 1982 (MW)	<0.001****		0.04****		<0.001****	
≤1	851	34.8	435	28.0	414	41.8
1.1–3	2118	28.5	1089	23.0	1027	34.3
3.1–6	800	22.5	417	20.4	382	24.9
6.1–10	252	25.0	130	24.6	122	25.4
>10	243	20.6	123	20.3	120	20.8
Income change (1982 → 2004–5)**	<0.001****		<0.001****		<0.001****	
Always poor	707	38.9	333	33.3	373	43.7
Non-poor → poor	712	33.8	340	29.4	371	38.0
Poor → non-poor	661	27.4	357	20.7	304	35.2
Never poor	2205	22.9	1174	19.8	1028	26.4
Maternal mental disorder*****	0.06***		0.67***		0.02***	
No	670	22.7	354	22.0	316	23.4
Yes	233	28.8	130	23.8	103	35.0
Birth weight (g)**	<0.001****		0.06****		0.03****	
<2,500	301	34.6	136	27.9	165	40.0
2,500–2,999	1018	30.6	450	25.3	568	34.7
3,000–3,499	1628	26.9	844	23.1	782	30.9
3,500–3,999	1096	26.7	609	22.5	484	32.0
≥4,000	241	22.4	165	20.0	76	27.6
Breastfeeding (months)**	0.68****		0.22****		0.73****	
<1.0	897	29.7	481	26.8	414	32.9
1.0–2.9	1072	27.1	544	22.2	527	32.1
3.0–5.9	951	28.1	482	24.1	468	32.3
6.0–8.9	393	26.0	202	19.3	191	33.0
9.0–11.9	159	26.4	82	18.3	76	34.2
≥12.0	678	28.6	334	23.7	344	33.4
Total******	4,285	28.0	2,207	23,5	2,078	32,8

MW: Minimum wages
*A total of 150 interviewees reported their ethnicity was Asian or Indigenous.
** Of all the 4,297 interviewees in 2004-5, information about 147 people was missing (3.4% of interviewees).
*** Chi-square test for heterogeneity
**** Chi-square test for linear trend
***** Variable used in the 2001 follow-up.
****** For 12 interviewees in 2004-5, information in common mental disorders was missing.

Perinatal Project Study showed that people with low socioeconomic condition, assessed as early as during pregnancy and at the age of seven, had about twofold increase in their risk of major depression during adulthood, irrespective of sociodemographic factors during childhood, family history of mental disorders, and socioeconomic condition during adult age.[10] These studies have attributed long-term effects of poverty to multiple adversities poor children more often experience such as higher prevalence of family

Table 2. Crude and adjusted analysis of common mental disorders in men in the 1982 cohort. Pelotas, Southern Brazil, 1982 to 2004–5.

Variable	Crude analysis		Adjusted analysis*	
	PR 95% CI	p	PR 95% CI	p
Skin color		0.003**		0.01**
White	1		1	
Black or Mixed	1.23 (1.03;1.46)		1.18 (0.98;1.42)	
Maternal schooling (years)		0.11***		0.77**
0–4	1.17 (0.91;1.50)		1.03 (0.74;1.43)	
5–8	1.03 (0.81;1.32)		0.97 (0.71;1.33)	
9–11	0.93 (0.67;1.29)		0.92 (0.64;1.31)	
>12	1		1	
Family income in 1982 (MW)		0.05***		0.19***
≤1.0	1.38 (0.94;2.02)		1.28 (0.87;1.88)	
1.1–3.0	1.13 (0.79;1.64)		1.09 (0.75;1.57)	
3.1–6.0	1.00 (0.67;1.49)		0.99 (0.67;1.47)	
6.1–10.0	1.21 (0.76;1.92)		1.21 (0.76;1.92)	
>10.0	1		1	
Income change		<0.001***		<0.001***
Always poor	1.69 (1.39;2.04)		1.59 (1.30;1.95)	
Non-poor → poor	1.49 (1.22;1.82)		1.46 (1.20;1.70)	
Poor → non-poor	1.05 (0.83;1.32)		0.99 (0.77;1.27)	
Never poor	1		1	
Birth weight (g)		0.06***		0.11***
<2,500	1.40 (0.93;2.10)		1.32 (0.88;1.99)	
2,500–2,999	1.27 (0.90;1.79)		1.23 (0.87;1.73)	
3,000–3,499	1.16 (0.83;1.61)		1.11 (0.80;1.55)	
3,500–3,999	1.12 (0.80;1.58)		1.10 (0.79;1.54)	
>4,000	1		1	
Breastfeeding (months)		0.23***		0.22***
<1.0	1.13 (0.89;1.44)		1.15 (0.90;1.47)	
1.0–2.9	0.94 (0.73;1.21)		0.97 (0.76;1.25)	
3.0–5.9	1.02 (0.79;1.31)		1.04 (0.81;1.34)	
6.0–8.9	0.82 (0.58;1.15)		0.86 (0.61;1.21)	
9.0–11.9	0.77 (0.47;1.27)		0.81 (0.50;1.34)	
>12.0	1		1	

MW: Minimum wages

* Variables in the first level (skin color, maternal schooling and family income in 1982) adjusted for each other and kept in the model if p<0.2. Change in income adjusted for skin color. Birthweight adjusted for skin color, maternal schooling and family income in 1982. Breastfeeding adjusted for skin color, maternal schooling, family income and birthweight.

** Wald test for heterogeneity

*** Wald test for linear trend

Table 3. Crude and adjusted analysis of common mental disorders in women. Pelotas, Southern Brazil, 1982 to 2004–5.

Variable	Crude analysis		Adjusted analysis	
	PR 95% CI	p	PR 95% CI	p
Skin color		< 0.001**		0.002**
White	1		1	
Black or Mixed	1.37 (1.20;1.57)		1.25 (1.09;1.43)	
Maternal schooling (years)		< 0.001***		0.33***
0–4	1.60 (1.28;2.02)		1.13 (0.84;1.52)	
5–8	1.41 (1.12;1.77)		1.09 (0.82;1.44)	
9–11	1.18 (0.88;1.58)		1.03 (0.74;1.41)	
>12	1		1	
Family income in 1982 (MW)		<0.001***		<0.001***
≤1.0	2.01 (1.39;2.89)		1.83 (1.27;2.66)	
1.1–3.0	1.65 (1.15;2.36)		1.56 (1.09;2.23)	
3.1–6.0	1.19 (0.81;1.76)		1.16 (0.79;1.71)	
6.1–10.0	1.22 (0.77;1.94)		1.20 (0.76;1.91)	
>10.0	1		1	
Income change		<0.001***		<0.001***
Always poor	1.66 (1.42;1.93)		1.44 (1.19;1.74)	
Non-poor → poor	1.44 (1.22;1.70)		1.37 (1.16;1.62)	
Poor → non-poor	1.34 (1.11;1.60)		1.17 (0.95;1.44)	
Never poor				
Birth weight (g)		0.03***		0.24***
<2,500	1.45 (0.96;2.18)		1.34 (0.89;2.01)	
2,500–2,999	1.26 (0.86;1.84)		1.18 (0.81;1.73)	
3,000–3,499	1.12 (0.77;1.64)		1.10 (0.76;1.61)	
3,500–3,999	1.16 (0.79;1.71)		1.18 (0.81;1.74)	
>4,000	1		1	
Breastfeeding (months)		0.73***		0.95***
<1.0	0.98 (0.80;1.20)		1.04 (0.85;1.27)	
1.0–2.9	0.96 (0.79;1.16)		0.99 (0.82;1.20)	
3.0–5.9	0.97 (0.79;1.18)		1.04 (0.85;1.26)	
6.0–8.9	0.99 (0.77;1.27)		1.08 (0.84;1.39)	
9.0–11.9	1.02 (0.72;1.45)		1.03 (0.72;1.49)	
>12.0	1		1	

MW: Minimum wages
* Variables in the first level (skin color, maternal schooling and family income in 1982) adjusted for each other and kept in the model if p<0.2. Change in income adjusted for skin color. Birthweight adjusted for skin color, maternal schooling and family income in 1982. Breastfeeding adjusted for skin color, maternal schooling, family income and birthweight.
** Wald test for heterogeneity
*** Wald test for linear trend

mental disorders; low IQ; abuse[18] and stressful events, family dysfunction; health conditions; and difficulty in forming attachments.[10]

The finding of higher prevalence of CMD in black subjects is consistent with other studies.[22] Among Black women, the association remained after adjusting for

income and schooling, which may suggest that racial discrimination, potentially experienced by minorities, would increase the risk of developing CMD.[14]

The association between maternal CMD and mental disorders of their daughters suggests that the mother's mental health has a greater impact on the daughters than the sons. This association may arise from greater heritability of depression among women.[4]

After adjustment low birth weight and maternal schooling did not remain associated to CMD in women. It suggests that this association found in women is probably due to lower socioeconomic condition of those with low birth weight and poorly educated mothers.

In the present study, the length of breastfeeding was not found to be associated to CMD, which corroborates the Promotion of Breastfeeding Intervention Trial (PROBIT) findings. The PROBIT study followed up 17,046 mother-child pairs in Belarus[13] and did not find an association between length of breastfeeding and mental health outcomes during childhood.

CMD in early adult life, a period of education transition and entrance into the labor market, may limit the social mobility of young people and create a cycle of disadvantages during their lifetime. Social selection, i.e., the negative impact of mental disorders on socioeconomic condition, of the 23-year-old people here studied can be assessed through further follow-up on this cohort to explore educational and work-related outcomes of CMD.

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