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ORIGINAL ARTICLE

Socioeconomic inequality in preterm birth in four Brazilian birth cohort studies☆

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KEYWORDS
Inequality;
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Preterm

Abstract
Objective: To analyze economic inequality (absolute and relative) due to family income in relation to the occurrence of preterm births in Southern Brazil.
Methods: Four birth cohort studies were conducted in the years 1982, 1993, 2004, and 2011. The main exposure was monthly family income and the primary outcome was preterm birth. The inequalities were calculated using the slope index of inequality and the relative index of inequality, adjusted for maternal skin color, education, age, and marital status.
Results: The prevalence of preterm births increased from 5.8% to approximately 14% (p-trend < 0.001). Late preterm births comprised the highest proportion among the preterm births in all studies, although their rates decreased over the years. The analysis on the slope index of inequality demonstrated that income inequality arose in the 1993, 2004, and 2011 studies. After adjustment, only the 2004 study maintained the difference between the poorest and the richest subjects, which was 6.3 percentage points. The relative index of inequality showed that, in all studies, the poorest mothers were more likely to have preterm newborns than the richest. After adjustment for confounding factors, it was observed that the poorest mothers only had a greater chance of this outcome in 2004.

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Conclusion: In a final model, economic inequalities resulting from income were found in relation to preterm births only in 2004, although a higher prevalence of prematurity continued to be observed in the poorest population, in all the studies.

PALAVRAS-CHAVE
Desigualdades;
Renda;
Fatores socioeconômicos;
Pobreza;
Prematuro

Iniquidades socioeconômicas em nascimentos prematuros em quatro estudos brasileiros de coortes de nascimento

Resumo
Objetivo: Analisar a iniquidade econômica (absoluta e relativa) decorrente da renda familiar na ocorrência de prematuros no Sul do Brasil.
Métodos: Foram realizados quatro estudos do tipo coorte de nascimentos nos anos de 1982, 1993, 2004 e 2011. A exposição principal foi a renda familiar mensal e o desfecho foi nascer prematuro. Foram calculadas as iniquidades através do *slope index of inequality* e o *relative index of inequality*, ajustados por cor da pele, escolaridade, idade e estado civil maternos.
Resultados: Houve aumento da prevalência de prematuros de 5,8 para cerca de 14% (*p* de tendência <0,001). O prematuro tardio foi a maior proporção encontrada dentre os que nasceram prematuros em todos os estudos, embora reduzindo suas taxas ao longo dos anos. A análise do *slope index of inequality* demonstrou iniquidade decorrente de renda nos estudos de 1993, 2004 e 2011. Após ajuste, apenas o estudo de 2004 manteve a diferença entre os mais pobres e os mais ricos, que foi de 6.3 pontos percentuais. Através do *relative index of inequality*, observou-se que, em todos os estudos, as mães mais pobres tiveram maior chance de ter prematuros, em comparação com as mais ricas. O ajuste para fatores de confusão demonstrou a manutenção dos mais pobres com maior chance do desfecho apenas em 2004.
Conclusão: No modelo final, iniquidades econômicas decorrentes da renda foram encontradas no nascimento de prematuros apenas em 2004, apesar da manutenção de maior ocorrência da prematuridade na população mais pobre, em todos os estudos.

Introduction

Global occurrence of preterm birth (PT) ranges from 3.8% to 17.5% of live births, being lower in high-income countries than in low/medium-income countries.[1] Brazil is among the ten countries with the largest numbers of PT.[1,2]

Maternal risk factors for spontaneous PT may or may not be prior to conception and include underprivileged socioeconomic position, black ethnicity, low education, low height, age below 20 or over 35, being single, exhausting work, or presence of maternal diseases such as high blood pressure and diabetes.[2–5]

The relationship of poverty with prematurity and higher neonatal mortality rates has been well-recognized.[2,3] Low-income families may share other risk factors that can influence inequity, such as black ethnicity, lower levels of education, and unemployment.[2,5,6]

Socioeconomic inequalities remain a major challenge to healthcare policies or strategies in low/medium-income countries. The slope index of inequality (SII) and the relative index of inequality (RII) can be used to assess inequalities, showing the magnitudes of absolute and relative differences, respectively, of indicators of socioeconomic position, in comparison with temporal trends of neonatal outcomes in epidemiological studies.[7,8]

The present study aimed to analyze inequalities of family income (absolute and relative) in relation to occurrence of PT in four birth cohorts conducted in Pelotas, RS, a city located in the southern region of Brazil, in the years 1982, 1993, 2004, and 2011.

Methods

Over the course of 1982, 1993, and 2004, all births in hospitals were identified and those whose mothers lived in the urban area of Pelotas were included in the cohorts. Soon after birth, the mothers were interviewed using a previously tested structured questionnaire and the newborns were examined and measured. Methodological details of each cohort (1982, 1993, and 2004) were described in previous publications.[9–11]

The 2011 data from the multicenter study International Fetal and Newborn Growth Consortium for the 21st Century (Intergrowth 21st) was made available. The inclusion criteria, sampling, and logistics were similar to those of the other cohort studies.[12]

The outcome variable was PT, i.e. birth at a gestational age (GA) < 37 weeks.[4] GA in completed weeks can be determined from: (i) the time elapsed since the first day of the last menstrual period (LMP); (ii) the estimated birth date