

Infant mortality in Central Europe: effects of transition

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(Mortalidad infantil en Europa central: efectos de la transición)

Abstract

Objective: To address the issue of infant mortality as an important health indicator, we systematically analyzed trends in infant mortality in five central and eastern European (CEE) countries (the Czech Republic, Hungary, Poland, Slovakia and Slovenia).

Methods: Infant mortality rates (per 1,000 live births) and trends were computed using the World Health Organization database, as well as selected European databases.

Results: In 1990, mortality rates in most CEE countries were appreciably higher than the mean European Union value of 9.2/1,000 (up to 14.8/1,000 in Hungary and 19.4/1,000 in Poland). However, between 1990 and 2001, infant mortality decreased substantially in all CEE countries, and in 2001 the rates in the Czech Republic (4.0/1,000) and Slovenia (4.3/1,000) were lower than the EU average of 4.6/1,000.

Discussion: Infant mortality is an important indicator of the improvements in health observed in CEE countries over the last decade.

Key words: Infant mortality. Democracy. Trends.

Resumen

Objetivo: Para estudiar la aplicación específica de la mortalidad infantil como indicador relevante de la salud, hemos considerado sistemáticamente las tendencias en la mortalidad infantil en 5 países de Europa central y del este (República Checa, Hungría, Polonia, Eslovaquia y Eslovenia).

Métodos: Hemos calculado las tasas de mortalidad infantil (por 1.000 nacidos vivos) y las tendencias a partir de la base de datos de mortalidad de la Organización Mundial de la Salud, así como otras bases de datos europeas y nacionales seleccionadas.

Resultados: En 1990, la mayoría de los países de Europa central y del este tenían tasas apreciablemente mayores que el valor medio de la Unión Europea de 9,2/1.000, hasta 14,8/1.000 en Hungría y 19,4/1.000 en Polonia. Sin embargo, entre 1990 y 2001, la mortalidad infantil disminuyó sustancialmente en todos los países de Europa central y del este, y en 2001 las tasas en la República Checa (4,0/1.000) y Eslovenia (4,3/1.000) fueron menores que la media de la Unión Europea (4,6/1.000).

Discusión: La mortalidad infantil es un indicador relevante de los cambios favorables de la salud observados en países de Europa central y del este durante la década pasada.

Palabras clave: Mortalidad infantil. Democracia. Tendencias.

Introduction

Infant mortality is an important indicator of health-related socioeconomic and cultural conditions, as well as of organizative and technical advancements in medical care. It is known, in fact, that infant mortality tends to be higher in countries with greater social and health-related inequalities, and to rise in countries which

have suffered substantial socioeconomic, cultural and political disruption¹.

Former non-market economy Central and Eastern European (CEE) countries underwent major political and social changes over the last two decades, and the collapse of socialized health systems led to the question of possible worsening of relevant health indicators². Thus, to address the specific issue of infant mortality as a relevant health indicator, we systematically considered trends in infant mortality in five CEE countries.

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Methods

The countries considered in this investigation are the Czech Republic, Hungary, Poland, Slovakia and Slovenia, i.e. the countries that first entered the period of politi-

cal and economic transition during the late 1980's (in the rest of accession countries, the political and economic transition started later, in the mid 1990's). For the purpose of comparison, European Union (EU) average data were used. The source of the data was the WHO database (<http://www3.who.int/whosis/menu.cfm>). For the years 2000 and 2001, the EU average was derived (for year 2000) and estimated (for year 2001) from Eurostat data. For Slovakia 1970-85 and Slovenia 1970-83 data from national offices (Institute of Public Health of the Republic of Slovenia and Institute of Health Information and Statistics of Slovakia) were used. The infant mortality rate was computed on the basis of the World Health Organization definition. Numbers of births were used to compute rates per 1,000 live-born. The average infant mortality rate for the whole region analysed (i.e., the 5 countries of interest) was also computed. The average per cent change per year (annual per cent change) was computed for each country and region, for each selected period. The computation was based on exponential function as a model of time trends.

Results

In the year 1990, the lowest infant mortality rates were observed in Slovenia (8.3/1,000) and the Czech Republic (10.8/1,000). The highest ones were in Poland (19.4/1,000) and Hungary (14.8/1,000). The average rate for the EU, with a value of 9.2/1,000, was appreciably lower than in CEE countries considered (average value: 16.6/1,000) (table 1).

In the period 1990-2001 infant mortality rates decreased in all countries of interest (fig. 1). These declines were substantial and steady, and a few increases of infant mortality rates that occurred in Slovakia and Hungary in selected years were of minor value, possible due to vagaries of chance. Only the freezing of infant mortality decrease in Slovenia between 1989 and 1992 (with values 8.1/1,000 in 1989 and 8.9/1,000 in 1992) appears to be real.

In 2001, the lowest infant mortality rates were observed in the Czech Republic (4.0/1,000) and Slovenia (4.3/1,000). These values were indeed below the EU average (4.6/1,000) (table 1). The highest infant mortality rates in 2001 were observed in Poland (7.7/1,000) and Hungary (8.1/1,000). The annual percent change between 1990 and 2001 was highest in the Czech Republic (-9.9%) and Poland (-9.1%).

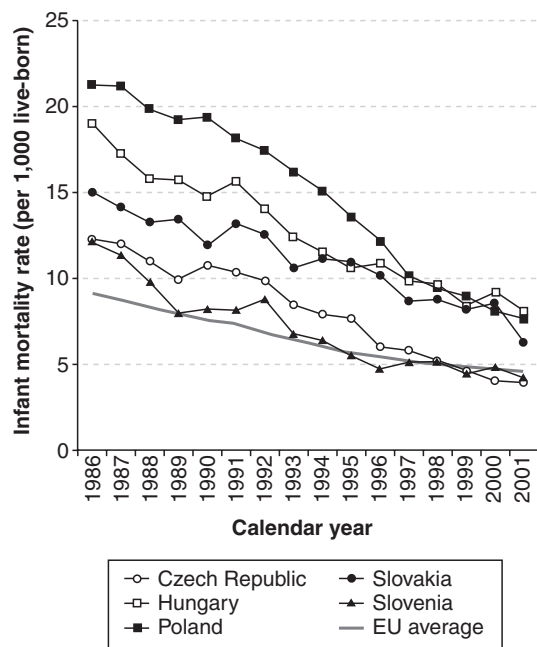
In all CEE countries, the percent decline was greater in the 1990's, compared to the 1980's. The change in fall was greatest in Poland (9.1% per year, compared to 3.1%) and in the Czech Republic (9.9 compared to 4.9%). In Hungary, the change in fall was smaller (5.8 compared to 3.9%), and in Slovenia and Slovakia chan-

Table 1. Infant mortality rate: values and trends in selected Central and Eastern European countries and the European Union (EU) average, period 1970-2001

Country	Infant mortality rates (/1,000 live-born)																	Total decrease in the period			Annual percent change	
	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	1980-90 ^b	1990-2001 ^c	1980-90 ^b	1990-2001 ^c	1980-90 ^b	1990-2001 ^c
Czech Republic	20.2	19.4	16.9	12.5	10.8	10.4	9.9	8.5	7.9	7.7	6.1	5.9	5.2	4.6	4.1	4.0	-36% of 1980 value	-63% of 1990 value	-4.9%	-9.9%	-4.9%	-9.9%
Hungary	35.9	32.9	23.2	20.4	14.8	15.6	14.1	12.5	11.6	10.7	10.9	9.9	9.7	8.4	9.2	8.1	-36% of 1980 value	-45% of 1990 value	-3.9%	-5.8%	-3.9%	-5.8%
Poland	33.4 ^a	25.1 ^a	21.2 ^a	18.4 ^a	19.4	18.2	17.5	16.2	15.1	13.6	12.2	10.2	9.5	9.0	8.1	7.7	-25% of 1980 value	-60% of 1990 value	-3.1%	-9.1%	-3.1%	-9.1%
Slovakia	25.7	23.7	20.9	16.3	12.0	13.2	12.6	10.6	11.2	11.0	10.2	8.7	8.8	8.3	8.6	6.3	-43% of 1980 value	-48% of 1990 value	-5.1%	-5.5%	-5.1%	-5.5%
Slovenia	24.1	16.7	14.7	13.1	8.3	8.2	8.9	6.8	6.5	5.6	4.8	5.2	5.2	4.6	4.9	4.3	-40% of 1980 value	-52% of 1992 value	-5.8%	-6.5%	-5.8%	-6.5%
Five CEE countries	30.7 ^a	25.0 ^a	20.7 ^a	17.6 ^a	16.6	16.0	15.3	13.8	13.1	12.1	10.8	9.3	8.8	8.0	7.7	7.0	-30% of 1980 value	-58% of 1990 value	-3.6%	-9.4%	-3.6%	-9.4%
EU average	21.9	18.1	12.4	9.5	7.6	7.4	6.9	6.5	6.1	5.6	5.5	5.2	5.1	4.9	4.7	4.6	-39% of 1980 value	-39% of 1990 value	-4.9%	-4.8%	-4.9%	-4.8%

^aIn 1986, infant mortality was based on the World Health Organization definition. ^bFor Slovenia 1980-92. ^cFor Slovenia 1992-2001.

Figure 1. Trends in infant mortality rates (/1,000 live-born) in selected Central and Eastern European countries and the European Union (EU) average, period 1986-2001.



ges were minor. Over the last decade, all CEE countries considered had greater annual percent change than the average EU one, leading to a levelling of infant mortality rates between accession countries and EU member states before 2004.

Discussion

Contrary to what had been forecasted by several scientific and political groups, (e.g., Paniccia³), in the period of political transformation considered no increase in infant mortality in CEE countries was observed. On the contrary, the key message from this systematic analysis of infant mortality over the last two decades is the substantial decline observed in countries of the area, despite the societal changes and related social disruptions occurred in several of these countries in the late 1980's and early 1990's, and despite some freezing of decline of infant mortality rates in Slovenia during the Balkan conflict, although Slovenia was only marginally affected by that conflict.

Over more recent years, some of the CEE countries considered reached infant mortality rates lower than the EU as a whole, reflecting the stronger falls registered throughout the last decade. Interestingly, the annual percent change in East Germany (former German De-

mocratic Republic, -7.4% in the 1990s, compared to -5.4% in the 1980s) during the 1990s was smaller than in the Czech Republic or Poland⁴. There are also differences in the components of infant mortality in various countries and regions. Thus, although there were declines in infant mortality in both parts of Germany in the 1990's, these were driven by a fall in neonatal mortality in the East, but of post-neonatal mortality in the West⁴.

In the Czech Republic, the decline in neonatal mortality registered between 1989-91 and 1994-95 was due to an improvement in the survival of infants of all birth weights, but especially for these of low birth weight, pointing to a relevant effect of better access to health care⁵.

Some changes of pregnant women behaviour (like decrease in smoking prevalence) and a wider availability of modern medical technology are also likely to have contributed to the substantial declines in infant mortality observed across various CEE countries⁷. It is also possible, however, that socioeconomic improvements had a relevant impact, following the establishment of democracy in these countries^{2,8-11}. An ecological exercise including data from 170 countries and using three different types of information -i.e., life expectancy, maternal mortality and infant mortality trends- showed, in fact, that after a country's wealth, level of inequality and size of its public spending were adjusted for, democracy had an independent favourable effect on health¹⁰.

Infant mortality is therefore a major indicator of the positive health changes that have been recorded in CEE countries during the last decade⁶.

Contributors

W. Zatoński participated in preparing concept of analysis, supervising the data analysis, writing and editing of the paper; M. Mikucka participated in data analysis, writing and editing of the report; C. La Vecchia participated in preparing concept, writing and editing of the paper; P. Boyle participated in preparing concept, and editing of the paper

Conflict of interest statement

None declared.

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