

# Evolution of the infant mortality rate: Is France peculiar?

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Infant mortality is known to be a marker of population health.<sup>1</sup> But different factors such as mother's age and health, ethnic differences, congenital malformations, prematurity and social determinants of health,<sup>2</sup> may impact infant mortality rate (IMR). The IMR is defined as the number of deaths of children under one year of age per 1000 live births over a given period. Three periods are categorised: the early neonatal (0–6 days after birth), the late neonatal (7–27 days) and the post neonatal (28–364 days). The aim of the United Nations Sustainable Development goal 3.2 is to decrease preventable child deaths by 2030.

In this issue of the Lancet Regional Health-Europe, Trinh et al. report on an increase in IMR in France between 2001 and 2019.<sup>3</sup> They performed a robust time-series analysis making use of birth and death certificates as registered by a governmental agency. They used AutoRegressive-Integrated Moving Average (ARIMA) joinpoint regression and sensitivity analyses modeling. Results show an average IMR of 3.63 per 1000 (higher in males than in females) as compared to 2 per 1000 in Finland, Iceland, Slovenia and Japan. Joinpoint analysis allowed them to identify three time-periods, with different figures. The IMR declined clearly from 2001 to 2005, more slowly in 2005–2012, and a rise in IMR identified between 2012 and 2019. Deaths in early and late neonatal periods were 47% and 21% respectively. Moreover each of these 3 periods had different patterns of IMR. However, After excluding deaths occurring at day one of life (24–26% of all deaths), the pattern of overall IMR remained similar. The authors claim that some 1200 excess deaths are observed each year in France as compared to other high-income countries and this is strongly supported by their study.

In 2019, Blondel et al. already reported that France should worry about newborn health.<sup>4</sup> According to the

2015 Euro-Peristat database, that includes 33 European countries, France was 14th for the rate of prematurity, 22nd for the stillbirth rate (3 per 1000) and 22nd for the neonatal mortality considering live born children (2.4 per 1000).

There are some limitations to the Trinh et al. study, as highlighted by the authors. Indeed, data such as gestational age, birthweight, presence of congenital anomalies are missing. Moreover, it seems reasonable to take in account maternal age, rate of sudden unexpected infant death (SUDI) in the postneonatal period, and health care expenditures. Four of the above points, namely gestational age/birthweight, maternal age, SUDI, congenital malformation will be briefly discussed. Unfortunately French birth and death certificates do not collect gestational age/ birthweight, and maternal ages. Nonetheless, those are collected in the neonatal death certificate and the so called « 8th day certificate », both of them being mandatory. As emphasized by the authors, France was less prone to actively resuscitate extremely preterm neonates below 26 weeks compared to many other countries.

It was recently shown in the USA that overall infant mortality decreased as maternal age rose, and that decline in maternal age-specific mortality rates represented probably two-thirds of this decline.<sup>5</sup> If SUDI rate in France went from 49.7 per 100,000 in 2005 down to 36.8 per 100,000 in 2015 ( $p = 0.028$ ), SUDI was in 2015 the most common cause of death in France in the postneonatal period, as in in Belgium, Finland and UK. However, SUDI ranked second in 9 other Western European countries.<sup>6</sup> Would IMR have declined in France in the postneonatal period after 2012 if the SUDI rate had followed the trend observed in these 9 countries? After extracting data for 31 European countries from the WHO database (2000–2015), it was observed that for France the number of deaths attributable to congenital anomalies dropped significantly. However, the proportion of deaths for congenital malformations remained stable.<sup>7</sup> It would be interesting to look for yearly evolution of the rate of congenital malformations, the exact time of death, due to such malformations, after birth, and whether or not policies of termination of pregnancy differed. Crossing different databases could give more robustness to the conclusion or open another hypothesis.

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It is our role as health professionals to inform policy-makers about the evolution of important health markers, with IMR being among the most important. After obtaining data from the World development indicators from 2000 to 2015 and concerning 117 countries from all continents, it was elegantly demonstrated that a significant positive relationship exists between health spending and IMR, especially in developed countries.<sup>8</sup>

### Declaration of interests

I have no Competing Interests to declare

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