

# A warning from the cradle?

*Because they may signal a deterioration in the nation's health, trends in infant mortality and low birth weight bear watching*

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## Résumé

LE TAUX DE MORTALITÉ INFANTILE est généralement reconnu comme un indicateur valable de la santé de la population d'un pays. Comme le signalent les D<sup>rs</sup> K.S. Joseph et Michael S. Kramer (page 535), après avoir diminué constamment pendant des années, le taux au Canada a augmenté légèrement de 1992 à 1993 et il est resté stable en 1994. Ils font état également d'une hausse marquée du taux de naissances prématurées de 1991 à 1994, phénomène qui peut être relié au taux de mortalité. Selon une analyse géographique, le taux de faible poids à la naissance a diminué au Québec, mais il a augmenté en Ontario de 1987 à 1994. Dans leur recherche d'explications, les D<sup>rs</sup> Joseph et Kramer ont découvert des erreurs sérieuses relativement à la saisie des données en Ontario pour 1993 et 1994, erreurs qui invalident les comparaisons pour ces années. Néanmoins, les fluctuations du taux de faible poids à la naissance même avant 1993 étaient prononcées tant en Ontario qu'au Québec. Il y a des écarts marqués entre les 2 provinces pour ce qui est du niveau des services visant à corriger les effets des désavantages socio-économiques chez les femmes enceintes. Il faut un système national exact d'acquisition et de surveillance des données périnatales pour éviter les erreurs de saisie des données et favoriser les comparaisons entre les provinces. La hausse du taux de mortalité infantile pourrait être l'indice d'une détérioration générale de la santé de la population; les tendances doivent par conséquent être minutieusement suivies.

The infant mortality rate is regarded as an important indicator of population health in a country. It is associated with several health determinants, such as maternal health, access to high-quality health care and socio-economic well-being. The rate of infant mortality in Canada fell consistently over the years to 6.08 per 1000 live births in 1992, giving Canada the fifteenth lowest rate among industrialized countries.<sup>1</sup> Last year Drs. K.S. Joseph and Michael S. Kramer reported a small increase in the infant mortality rate, to 6.28 per 1000 live births in 1993.<sup>2</sup> Their analysis indicated that this increase was due to changes in the registration of newborns weighing less than 500 g as live births. This was the first time for many years that the Canadian infant mortality rate had increased. So, although the data provided were certainly convincing and increased attention had indeed been given to such tiny infants, those of us directly involved in perinatal care were left with a nagging suspicion that there were alternative explanations.

According to Joseph and Kramer's follow-up article in this issue (page 535), the higher infant mortality rate in 1993 was sustained in 1994. Between those 2 years, the rate fell in Nova Scotia, New Brunswick, Quebec and Manitoba, and increased in Ontario, Saskatchewan, Alberta, BC and Newfoundland. None of the changes was statistically significant. There was a significant increase in the rate of preterm births, from 6.6% in 1991 to 7.3% in 1994, which was mainly due to an increase in births of infants of 32 to 36 weeks' gestation. There was a decrease in the proportion of infants with low birth weight and unstated gestational age, from 1.5% in 1991 to 0.2% in 1994.



*Editorial*

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*Can Med Assoc J* 1997;157:549-51

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It is important to focus on the rate of low birth weight, because newborns with a low birth weight account for 75% of all deaths before age 1. Although the rates of low birth weight in the provinces where there are enough births to make meaningful annual comparisons fluctuated somewhat between 1987 and 1994, no consistent patterns were noted, except in Quebec and Ontario. In Quebec there was a significant decrease, from 6.05% in 1989 to 5.87% in 1994; in contrast, in Ontario the rate increased significantly, from 5.36% to 6.54% over the same period. Analysis by birth weight confirmed that the changes affected several categories in both provinces. Although the proportion of reported live births accounted for by newborns weighing less than 500 g increased from 1987 to 1994 in Ontario, the marked variations from year to year since 1990 make interpretation of this finding difficult.

Joseph and Kramer suggest that the apparent steady increase in preterm births in Canada between 1991 and 1994 may be attributable to the increasing use of obstetric ultrasonography rather than date of last menstrual period for estimation of gestational age. However, they recognize that this change cannot account for the concomitant increase in the proportion of newborns with a low birth weight.

Determination of gestational age by obstetric ultrasonography depends on fetal morphometry. In the earlier days of the use of ultrasonography to assess gestational age, radiologists sometimes inappropriately changed an expected date of confinement that had been calculated earlier in the pregnancy using the date of the last menstrual period. This "correction" was based on assessment of gestational age using misleading third trimester biparietal diameter measurements that were reduced as a result of unrecognized intrauterine growth restriction. This practice could have accounted for an increase in apparent preterm births due to increased use of ultrasonography. However, this phenomenon was essentially eradicated when the timing of ultrasonographic gestational assessment was standardized to early in the second trimester and the method was extended to include other measurements.

The decrease in the proportion of live births of newborns with unstated gestational age should not account for the increased rate of preterm births, which mainly involved infants of 32 to 36 weeks' gestation, not a problematic group in this regard. A true increase in the rate of preterm births is a definite possibility, to be viewed with concern.

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The authors' pursuit of the apparent increase in the proportion of newborns with low birth weight in Ontario led to their discovery of serious reporting anomalies in the Ontario data for 1993 and 1994. It seems that the second

digits in ounces were rounded off as if they were decimals. This would certainly lead to over-reporting of low birth weight, the cut-off being 2.5 kg (5 lb 8 oz). That such an error could have occurred suggests that those responsible for entering the data had little understanding of the importance of the material

they were entering or of the basic difference between metric and imperial measures. Garbage in will undoubtedly produce garbage out! The error was certainly avoidable: after several previous attempts beginning in the late 1970s, Canada has for the past 4 years been developing a standardized national perinatal data acquisition and surveillance system. Participants in this project include perinatal epidemiologists and perinatologists, experts who have in-depth knowledge of the subject. Unfortunate errors in data entry of the kind discovered by Joseph and Kramer would have been recognized quickly if data collection were supervised by such experts. These errors must surely be a signal to governments to fund improved, nationally standardized acquisition of data on Canada's births. Compliance with completion of data records by health care professionals involved in perinatal care will also be essential for the surveillance system to succeed.

Regardless of these errors, the data before 1993 indicate a significant difference in the trends in births of newborns with a low birth weight between Quebec and Ontario. This difference requires explanation.

Many determinants of preterm birth and intrauterine growth restriction merit study. As Joseph and Kramer comment, available data are inadequate to help elucidate possible factors. Some factors that could influence low birth weight are unlikely to account for the observed differences: these include differences between the 2 provinces in rates of smoking during pregnancy, in management of labour in very early gestation, in the use of hormonal induction of pregnancy and in vitro fertilization (which could result in disparate rates of multiple births) or in practices regarding induction of labour for pregnancy complications between 32 and 36 weeks' gestation.

The availability of prenatal care, the effects of the worsening economy and the availability of programs to counter the effects of economic hardship also need investigation. There is a well-documented shortage of Can-



adian obstetricians and of family physicians who participate in obstetric care. However, although many family physicians have withdrawn from caring for women in labour, especially in Ontario and Quebec, many still practise prenatal shared care. The situation in Ontario was recently detailed in a report of the Reproductive Care Committee of the Ontario Medical Association.<sup>3</sup> The withdrawal of family physicians from obstetric practice was shown to be slowing but the workload handled by obstetric specialists increasing. The quality of prenatal care should play a role in the prevention of low birth weight; the availability of physicians for prenatal care in the 2 provinces should be compared. Kramer<sup>4</sup> has pointed out elsewhere that studies of prenatal care in prevention of low birth weight are often flawed; nevertheless, limited availability of providers and insufficient prenatal services in sites routinely used by high-risk populations are 2 recognized barriers to adequate prenatal care.<sup>5</sup>

Socioeconomic disadvantage is associated with an increased incidence of low birth weight.<sup>6</sup> Although the poverty rate was somewhat higher in Quebec than in Ontario in 1994, the market-poverty index, which incorporates both depth and rate of poverty, deteriorated much more in Ontario than in Quebec between 1984 and 1994.<sup>7</sup> Because of these economic disparities, the measures taken in Quebec and Ontario to counter the effects of socioeconomic disadvantage on pregnancy merit comparison. Since the mid- to late 1980s, the Quebec government and its community health departments have modelled their prenatal prevention programs on those in France and on the successful Montreal Diet Dispensary. Comprehensive prenatal preventive health programs have been introduced, including the *Oeuf, Lait, Orange* program, psychosocial support programs and income subsidies, which are made available as soon as a pregnancy is confirmed.<sup>8</sup> These programs were reaffirmed and strengthened in the early 1990s<sup>9</sup> and again more recently.<sup>10</sup> In contrast, Ontario has no comparable province-wide comprehensive prenatal prevention program, although there are a few long-established programs in specific communities, such as Healthiest Babies Possible and Jessie's Centre for Teens, both in Toronto. The two Ontario Best Start programs were not operating during the years covered by Joseph and Kramer's study. The Canada Prenatal Nutrition Program is now available at several sites in Ontario and throughout the country. With few exceptions, these programs are not as comprehensive as those introduced by the Quebec government.

Unfortunately, because of a lack of essential informa-

tion, much of this discussion must be speculative. Further interpretation of the factors responsible for the differences in low-birth-weight trends between Quebec and Ontario must await re-entry of the erroneous Ontario data by Statistics Canada and subsequent careful analysis. Full operation of a national perinatal surveillance system should obviate the need to speculate on such a vital matter. Because of the risks of adverse short- and long-term outcomes and the high personal and societal costs associated with low birth weight, the interprovincial differences demand careful study, especially if they persist after completion of a re-analysis. If the differences are confirmed, universal application of the Quebec model of preventive prenatal care could provide a solution. Because of the possible sinister implications of increased infant mortality for the nation's health, future changes must be watched and evaluated carefully.

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