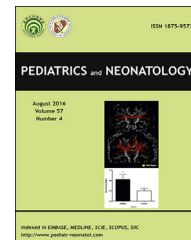




Available online at www.sciencedirect.com

ScienceDirect

journal homepage: <http://www.pediatr-neonol.com>



ORIGINAL ARTICLE

International Ranking of Infant Mortality Rates: Taiwan Compared with European Countries



Fu-Wen Liang^a, Tsung-Hsueh Lu^a, Mei-Hwan Wu^b,
Hung-Chi Lue^c, Tung-Liang Chiang^d, Ya-Li Huang^{e,*},
Lea-Hua Chen^f

^a National Cheng Kung University Research Center for Health Data and Department of Public Health, College of Medicine, National Cheng Kung University, Tainan, Taiwan

^b Department of Pediatrics, National Taiwan University Hospital, Taipei, Taiwan

^c Child Health Alliance Taiwan, Taipei, Taiwan

^d Institute of Health Policy and Management, School of Public Health, National Taiwan University, Taipei, Taiwan

^e Department of Public Health, School of Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan

^f Department of Statistics, Ministry of Health and Welfare, Taipei, Taiwan

Received Feb 15, 2015; received in revised form Apr 28, 2015; accepted Jul 14, 2015
Available online 12 December 2015

Key Words

infant mortality;
international
comparisons;
neonatal mortality;
postneonatal
mortality;
Taiwan

Background: Rankings of infant mortality rates are commonly cited international comparisons to assess the health status of individual countries. We compared the infant mortality rate of Taiwan with those of European countries for 2004 according to two definitions.

Methods: First, the countries were ranked on the basis of crude infant, neonatal, and postneonatal mortality rates. The countries were then ranked according to the mortality rates calculated after exclusion of live births with a known birth weight of <1000 g, which is the definition set by the World Health Organization.

Results: Taiwan was ranked 11th, 12th, and 15th among 26 high-income countries for crude infant, neonatal, and postneonatal mortality rates, respectively. The ranks were 12th, 16th, and 15th, respectively, for mortality rates, excluding live births with a birth weight of <1000 g. However, in only seven, four, and 10 countries were the mortality rate ratios statistically significantly lower than Taiwan in infant, neonatal, and postneonatal mortality, respectively, according to the second definition.

Conclusion: The ranking of Taiwan was similar (11th vs. 12th) according to the two definitions. However, after consideration of the confidence interval, only six countries (Sweden, Finland,

* Corresponding author. Department of Public Health, School of Medicine, College of Medicine, Taipei Medical University, Number 250, Wu-Hsing Street, Taipei City 110, Taiwan.

E-mail address: ylihuang@tmu.edu.tw (Y.-L. Huang).

Czech Republic, Belgium, Austria, and Germany) had infant mortality rates statistically significantly lower than those of Taiwan in 2004.

Copyright © 2015, Taiwan Pediatric Association. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Rankings of infant mortality rates are the most commonly cited international comparisons used to assess the health status of individual countries. International organizations, such as the United Nations Children's Fund (UNICEF) and the Organization for Economic Cooperation and Development (OECD), routinely publish international rankings of perinatal, infant, or child mortality rates among countries.^{1,2} Furthermore, the aim of United Nations Millennium Development Goal 4 is to reduce mortality of children younger than 5 years by two thirds between 1990 and 2015. Therefore, a series of studies comparing the neonatal, postnatal, infant, and under-5 years mortality across countries have been published.^{3–9}

A previous study indicated that the infant mortality rate of Taiwan ranked 20th among 21 countries.¹⁰ A recent study suggested that the survival rate of very low birth weight infants was higher than that observed in the USA, but lower than Canada and Japan.¹¹ However, many scholars indicated the presence of bias, such as the variation in registration of live births and stillbirths among countries, in comparisons of infant mortality rates among countries.^{12–25} Therefore, the World Health Organization (WHO) recommended restricting international comparisons of infant mortality rates to comparing live births with a known birth weight of at least 1000 g.²⁶ Despite this suggestion, information on the number of live births with a birth weight < 1000 g is not readily available for many countries, which hinders valid international comparisons. Recently, Joseph et al²³ studied the number of live births and neonatal and infant deaths of infants <1000 g in 23 European countries, Canada, and the United States. We used the information from Joseph et al²³ to compare the infant mortality rate of Taiwan with those of the aforementioned European countries.

2. Methods

2.1. Data sources

Information on the number of live births, neonatal, post-neonatal, and infant deaths according to the birth weights (particularly those < 500 g and <1000 g) of 23 European countries, Canada, and the United States was obtained from Joseph et al,²³ with most of the data from 2004. The corresponding information for Taiwan for 2004 was obtained by linking data from the birth registry, birth reporting, and cause of death, sourced through the processes established by the collaboration center for health

information application, Ministry of Health and Welfare, Taiwan.²⁷

2.2. Measures

First, the reported proportions of live births and neonatal deaths with a birth weight of <500 g or <1000 g for each country were compared. Second, the countries were ranked based on the crude infant (<1 year), neonatal (0–27 days), and postneonatal (28–364 days) mortality rates (deaths per 1000 live births). Third, the countries were ranked again according to the mortality rates in which the live births with a known birth weight of <1000 g were excluded. Finally, the mortality rate ratios (RR) and 95% confidence intervals (95% CI) were computed using Taiwan as the reference in order to assess the magnitude and statistical significance of the observed differences in the mortality rates between Taiwan and the other countries. The formula for estimation of 95% CI is as follows²⁸:

$$RR_{L,U} = e^{\ln RR \pm 1.96 \sqrt{\frac{1}{A1} + \frac{1}{A2}}}$$

where *L* is the lower limit and *U* is the upper limit of 95% CI. *A1* is the number of deaths in the compared country, and *A2* is the number of deaths in Taiwan.

This study was reviewed by the Institutional Review Board (IRB) of the National Cheng Kung University Hospital, Tainan, Taiwan with IRB Number B-ER-102-120-t.

3. Results

The reported proportion of live births with a birth weight <500 g varied widely among countries in 2004. In eight countries, the live birth rates were less than one per 10,000 live births (Table 1). The rate was 3.8 per 10,000 live births for Taiwan, which ranked 20th among 26 countries. However, the proportion of live births with a birth weight <1000 g in Taiwan was 30.8 per 10,000 live births, which ranked 7th among 26 countries (Table 1).

When ranking was based on crude infant mortality rates, Taiwan ranked 11th among 19 high-income countries. When infant mortality rates were calculated after live births with a birth weight <1000 g were excluded, Taiwan ranked 12th (Table 2). Of the 11 countries that ranked ahead of Taiwan for infant mortality, excluding live births with a birth weight <1000 g, only seven countries had infant mortality rates statistically significantly lower than those of Taiwan (Figure 1A).

We further categorized infant mortality into neonatal and postneonatal mortality. Taiwan ranked 12th for the crude neonatal mortality rate; however, when the neonatal mortality rate excluding birth weights <1000 g was

Download English Version:

<https://daneshyari.com/en/article/4174882>

Download Persian Version:

<https://daneshyari.com/article/4174882>

[Daneshyari.com](https://daneshyari.com)