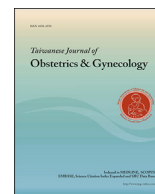




Contents lists available at ScienceDirect

Taiwanese Journal of Obstetrics & Gynecology

journal homepage: www.tjog-online.com

Original Article

Pregnancy-associated mortality in Taiwan, 2004–2011

Li Sha^{a,1}, Tung-Pi Wu^{a,1}, Fu-Wen Liang^b, Lea-Hua Chen^c, Tsung-Hsueh Lu^b,
Ya-Li Huang^{d,*}^a Department of Obstetrics and Gynecology, Sin-Lau Christian Hospital, Tainan, Taiwan^b Research Center for Health Data, National Cheng Kung University, Tainan, Taiwan^c Department of Statistics, Ministry of Health and Welfare, Taipei, Taiwan^d Department of Public Health, School of Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan

ARTICLE INFO

Article history:

Accepted 22 June 2015

Keywords:

cause of death
data linkage
pregnancy-associated mortality
Taiwan

ABSTRACT

Objective: Pregnancy-associated death is defined by the American College of Obstetricians and Gynecologists as “a death of a woman while pregnant or within 1 year of termination of pregnancy, irrespective of the cause of death.” We sought to determine pregnancy-associated mortality ratio (PAMR) in Taiwan and to compare the cause of death pattern with other countries to assess the national health status of Taiwanese women.

Materials and methods: We linked four nationwide population-based data sets (birth registration, birth notification, National Health Insurance claims, and cause of death mortality) from 2004 to 2011 to identify women aged 15–49 years that died from pregnancy-associated deaths. We then calculated the PAMR and cause of death distribution by maternal age.

Results: A total of 559 pregnancy-associated deaths were identified with an overall PAMR of 36 (deaths per 100,000 live births). The J-shaped age-specific PAMR mortality pattern was noted, in which the PAMR was 32, 25, 24, 36, 71, 143, and 369 for women aged 15–19 years, 20–24 years, 25–29 years, 30–34 years, 35–39 years, 40–44 years, and 45–49 years, respectively. The age-standardized PAMR decreased drastically from 45 in 2004–2005 to 36 in 2006–2007 and 30 in 2008–2009, but leveled off to 33 in 2010–2011. The proportion of indirect causes increased from 2004–2007 to 2008–2011 among women aged 15–29 years and 35–49 years.

Conclusion: Compared with previous studies, the PAMR of Taiwan is moderate. However, the proportion of external causes of pregnancy-associated deaths in Taiwan is the lowest compared with other regions. Further studies (such as death review) are needed to explore possible preventable factors.

Copyright © 2016, Taiwan Association of Obstetrics & Gynecology. 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/>).

Introduction

Maternal mortality is a commonly used national indicator of health status of women [1]. Maternal death is defined by the World Health Organization as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes” [2]. One of the limitations of this

definition is that many deaths from direct causes (such as amniotic fluid embolism, postpartum hemorrhage, or eclampsia) or indirect causes (such as cardiovascular diseases or infectious diseases) might occur more than 42 days after termination of pregnancy with the help of advanced medical technology [3]. Another limitation is that this definition restricts to only biologically related causes of death. However, as indicated by Frye [4], some deaths are socially related to the pregnancy and may not have occurred without pregnancy, such as suicide due to postpartum depression, homicide due to intimate partner violence on pregnant or postpartum women, or motor vehicle crashes due to eclampsia.

To address these limitations, a new term “pregnancy-associated death” was proposed by the Centers for Disease Control and Prevention, in collaboration with the Maternal Mortality Special Interest Group of the American College of Obstetricians and

* 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).

¹ These authors are joint first authors.

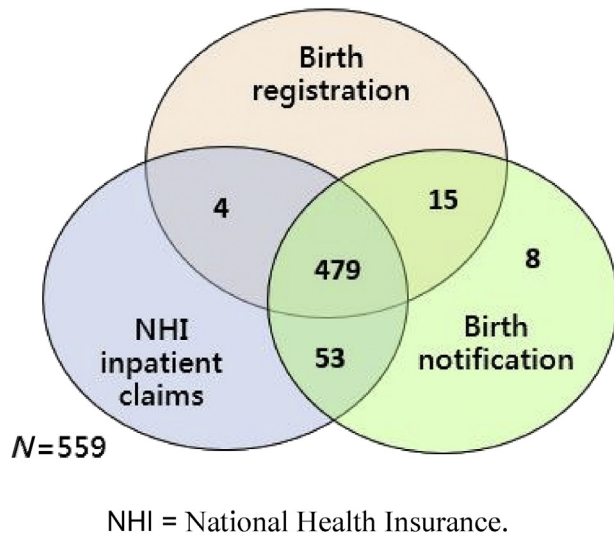


Figure 1. The number of pregnancy-associated deaths identified from different data sources according to linked data in Taiwan, 2004–2011.

Gynecologists to define it as “death of a woman while pregnant or within 1 year of termination of pregnancy, of the cause of death” [5,6]. Although the concept of “pregnancy-associated death” was proposed in 1986, few studies have examined the pregnancy-associated mortality ratio (PAMR) and most have been confined to one state in the United States and examined only a small number of cases [7–10]. One of the reasons why there were few studies on this topic is that official published mortality data used the traditional definition (i.e., maternal death) set by the World Health Organization, it is therefore difficult to identify the pregnancy-associated deaths. Only through the enhanced surveillance of different sources (such as birth certificate, fetal certificate, hospital medical records, or autopsy reports) we could identify the pregnancy-associated deaths. Furthermore, no study has been performed on this issue in Asian countries. We thus undertook this study to determine PAMR in Taiwan and to compare the cause of death pattern with other countries to assess the health status of Taiwanese women.

Materials and methods

Data sources

We linked four nationwide population-based data sets [i.e., birth registration, birth notification, National Health Insurance (NHI) inpatient claims, and cause of death mortality data] to identify pregnancy-associated deaths for years 2004–2011. As the four data sets were maintained by different government sectors, we could link these data only through the Collaboration Center of Health Information Application, which was established by the Department

of Statistics, Ministry of Health and Welfare [11]. To avoid the release of personal information recorded in the data sets, the linkage analyses were conducted in an isolated, restricted-access room. Only aggregated statistical tables without a single cell with a number of counts below three were released to the investigators.

Measures

To identify pregnancy-associated deaths, we used identification information to link the data of women aged 15–49 years from 2004 to 2011. Because the number of cases linked between the NHI claims data and the cause of death mortality data was excessive, we included only NHI inpatient claims data with pregnancy-related diagnoses (ICD-9-CM codes 630–676 or V27) recorded in one of five discharge diagnoses. Subsequently, we confined the study to deaths in which the birth and death dates were within 365 days, in accordance with the Centers for Disease Control and Prevention in collaboration with the Maternal Mortality Special Interest Group of the American College of Obstetricians and Gynecologists definition of pregnancy-associated death.

We further classified the causes of pregnancy-associated deaths as “direct,” “indirect,” or “external” according to two information sources: one from diagnoses recorded in the NHI inpatient claims data and the other from the causes of death diagnosis reported on the death certificate. “Direct” causes of death are those resulting from obstetric complications (e.g., amniotic fluid embolism, postpartum hemorrhage, and preeclampsia/eclampsia), interventions, omissions, incorrect treatment, or a chain of events resulting from any of these (ICD-9-CM codes 630–676). “Indirect” causes of death are those resulting from an existing disease or a disease that developed during pregnancy and was not due to any of the direct obstetric causes but was aggravated by the physiological effects of pregnancy, such as cerebrovascular and cardiac diseases (ICD-9-CM codes 001–629, 680–759, or 780–789). “External” causes are unintentional injury (e.g., motor vehicle traffic crashes, falls, unintentional poisoning or complications of medical or surgical procedures), suicide, or homicide (ICD-9-CM codes E800–E999).

Statistical analysis

We first calculated overall and maternal age-specific PAMR (deaths per 100,000 live births) using data from 2004–2011 combined. We then computed age-standardized PAMR for years 2004–2005, 2006–2007, 2008–2009, and 2010–2011. Next, we compared the distribution of causes of pregnancy-associated deaths across years. Finally, we compared the pattern of mortality of Taiwan estimated in this study with those in previous studies.

Results

We initially extracted 644 potential pregnancy-associated deaths from the four linked data sets. We identified seven deaths

Table 1
Number and mortality ratio (deaths per 100,000 live births) of pregnancy-associated deaths by maternal age according to linked data in Taiwan, 2004–2011.^a

Maternal age (y)	No. of deaths	%	No. of live births	%	Mortality ratio
15–19	11	2.0	34,159	2.2	32.2
20–24	57	10.2	230,261	14.8	24.8
25–29	133	23.8	550,437	35.4	24.2
30–34	190	34.0	532,424	34.2	35.7
35–39	129	23.1	182,666	11.7	70.6
40–44	36	6.4	25,131	1.6	143.2
45–49	3	0.5	814	0.1	368.6
Total	559	100.0	1,555,892	100.0	35.9

^a Numerator of mortality ratio is the number of pregnancy-associated deaths and the denominator of mortality ratio is the number of live births.

Download English Version:

<https://daneshyari.com/en/article/3975155>

Download Persian Version:

<https://daneshyari.com/article/3975155>

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