Journal of Pregnancy and Child Health
ISSN: 2376-127X

de Leon Ponce et al., J Preg Child Health 2015, 2:1
DOI: 10.4172/2376-127X.1000126

Research Article Open Access

# The Problem of Indirect Causes of Maternal Mortality

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## Abstract

**Introduction:** Maternal mortality remains as a major Public Health challenge. About 800 women die from pregnancy related complications around the world every day. In 2013, 289 000 women died during and following pregnancy and childbirth. Almost all of these deaths (99%) occur in developing countries, and most could have been prevented. In Mexico there are still a significant number of deaths that are not properly registered as maternal deaths, so in the present study we analyze the causes and classification of maternal deaths occurred in six Intensive Care Units (ICUs) in Mexico in the period 1973 - 2013.

**Material and methods:** We realized a retrospective analysis of all maternal deaths during a forty year period (1973–2013) occurred in six Mexican Intensive Care Units (ICUs). We also review the diagnostic criteria, previous diseases; pregnancy related risk factors, state of hospitalization, length of stay, number of co-morbid conditions, adverse events and type of organic failure.

**Results:** We identified during the last 40 years 7735 maternal deaths (maternal mortality ratio of 7.2% per year). From the total deaths, 6723 were direct causes and 1012 were indirect causes. In the 75% of the total indirect causes the patients received prenatal control in the first level of attention, and were referred to the third level of attention only when the mortal complication was an essentially untreatable.

**Keywords:** Maternal mortality; Indirect causes

## Introduction

Maternal mortality remains as a major Public Health challenge despite numerous strategies devised by the international community. About 800 women die from pregnancy related complications around the world every day. In 2013, 289 000 women died during and following pregnancy and childbirth. Almost all of these deaths (99%) occur in developing countries, and most could have been prevented [1-3].

Improving maternal health is 1 of the 8 Millennium Development Goals (MDGs) adopted by the international community in 2000. Under MDGs, countries committed to reducing maternal mortality by three quarters between 1990 and 2015. Since 1990, maternal deaths worldwide have dropped by 45%. However, between 1990 and 2013, the global maternal mortality ratio (i.e. the number of maternal deaths per 100 000 live births) declined by only 2.6% per year. This is far from the annual decline of 5.5% required to achieve MDGs [1-4].

The maternal mortality ratio in developing countries in 2013 is 230 per 100 000 live births versus 16 per 100 000 live births in developed countries. There are large disparities between countries, with few countries having extremely high maternal mortality ratios around 1000 per 100 000 live births. The high number of maternal deaths in some areas of the world reflects inequities in access to health services, wrong health policies and highlights the gap between rich and poor [1-5].

Most maternal deaths are preventable, as the health-care solutions to prevent or manage complications are well known. All women need access to antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth. It is particularly important that all births are attended by skilled health professionals, as timely management and treatment can make the difference between life and death [5-7].

Poor women in remote areas are the least likely to receive adequate health care. While levels of antenatal care have increased in many parts of the world during the past decade, only 46% of women in low-income countries benefit from skilled care during childbirth [5-7].

## The problem of Mexico

In 2011, the Mexican Federal government reported that Mexico won't be able to achieve the Millennium goal regarding maternal mortality decline. High maternal mortality rates are principally a failure of political will and attention, reflected in poor policy design, inadequate capacitation of the medical personal and inequities in access to health services [8,9].

In Mexico there are still a significant number of deaths that are not properly registered as maternal deaths, this is because maternal mortality is hard to measure among all the National Institutes of Health, although the WHO has clearly defined maternal mortality and there are specific definitions for the four types of maternal deaths (direct obstetric, indirect obstetric, late maternal, and related to the pregnancy). The objective of the present study is to analyze the causes and classification of maternal deaths occurred in six Intensive Care Units (ICUs) in Mexico in the period 1973 – 2013 [9-11].

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**Received:** September 06, 2014; **Accepted:** December 23, 2014; **Published:** December 24, 2014

**Citation:** de Leon Ponce MAD, Jesus Carlos BG, Armando Alberto MS (2015) The Problem of Indirect Causes of Maternal Mortality. J Preg Child Health 2: 126. doi:10.4172/2376-127X.1000126

## Material and Methods

We realized a retrospective analysis of all maternal deaths during a forty year period (1973–2013) occurred in six Mexican Intensive Care Units (ICUs). The data for this study was extracted from the review of the ICU's medical records. Each maternal death was scrutinized to pin point the exact cause of death (according to the International Statistical Classification of Diseases and Related Health Problems) and the cause of maternal death was classified according to the WHO recommendations. We also review the diagnostic criteria, previous diseases; pregnancy related risk factors, state of hospitalization, length of stay, number of co-morbid conditions, adverse events and type of organic failure.

## Results

We identified during the last 40 years 7735maternal deaths occurred in six different ICUs, which represents a maternal mortality ratio of 7.2% per year. From the total deaths, 6723 were direct causes and 1012 were indirect causes (Table 1). Maternal deaths were highest in the age group 15 -20 years (39%) followed by 25 - 30 years (31%) and 31- 35 years (25%).The direct causes of maternal mortality are presented in Table 2. The Table 3 shows how the indirect causes of maternal mortality were classified into ten groups.

The analysis of the indirect causes of maternal mortality reveal that in 760 cases (75%), the patients received prenatal control in the first level of attention, and they were referred to the third level of attention only when the mortal complication was an essentially untreatable.

## Conclusions

While there are numerous factors that contribute to maternal mortality, we focus on the problem of the indirect causes of maternal mortality. In the most of the cases the maternal and obstetric complication and its outcomes could be prevented by an adequate health policy, which contemplates an opportune diagnosis of the non pregnancy related diseases and its opportune attention in the third level of attention health services.

We argument that many cases cataloged as indirect maternal death are really due to direct causes, including adverse incidents that occurred during pregnancy, such as:

a) Lack of medical acknowledgment about critical care obstetrics

b) Lack of real specialists coordination

c) Lack of good quality obstetrics critical care units

d) Lack of high risk pregnancy clinics y hospitals with full equipment and technology

These adverse incidents are classified in omission or commission events, committed by the doctor, the hospital or the institution and the severity can lead to maternal death. That is why we support the fact that these adverse effects must be count on direct maternal death cases. The Prevention of Maternal Mortality Program must a collaborative effort of the federal government, medical authority and the medical multidisciplinary team.

| | n | % |
|---|---|---|
| Total | 7735 | 100 |
| Direct causes | 6723 | 86.9 |
| Indirect causes | 1012 | 13.1 |

**Table 1:** Maternal deaths occurred in six different ICUs

| | n | % |
|---|---|---|
| Preeclampsia | 2433 | 36.2 |
| Haemorrhage | 1835 | 27.3 |
| Infectious diseases | 1627 | 24.2 |
| Others | 828 | 12.3 |

**Table 2:** Causes of direct maternal deaths.

| | n | % |
|---|---|---|
| Cardiopathy | 425 | 42 |
| Endocrinopathy | 151 | 15 |
| Pneumopathy | 101 | 10 |
| Gastropathy | 80 | 8 |
| Nephropathy | 80 | 8 |
| Blood disorders | 60 | 6 |
| Rheumatic disease | 40 | 4 |
| Anesthesia complications | 30 | 3 |
| Anaphylaxis | 20 | 2 |
| Trauma | 20 | 2 |

**Table 3:** Causes of indirect maternal deaths.

### References

1. Conde-Agudelo A, Belizan JM, Lammers C (2004) Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. American Journal of Obstetrics and Gynecology 192:342–349.
2. Patton GC, Coffey C, Sawyer SM, Viner RM, Haller DM, et al (2009). Global patterns of mortality in young people: a systematic analysis of population health data. Lancet 374:881–892.
3. Diaz de Leon PM, Briones GJC (2013) Disminuir la muerte materna compromiso no cumplido por nuestro pais. Rev Asoc Mex Med Crit Ter Int 27: 68-70.
4. Diaz de Leon PM, Espinoza MML, Yanez MI, Niz RV, Kably AA (1978) La unidad de cuidados intensivos en ginecología y obstetricia. Medicina 1228: 20-31.
5. Diaz de Leon PM, Briones GJC, Kably AA, Barron VV, Espinoza MML, et al. (1997) Cuidados Intensivos en Obstetricia. Rev Asoc Mex Med Crit Ter Int 2: 36-40.
6. Say L (2015) Global Causes of Maternal Death: A WHO Systematic Analysis. Lancet.
7. WHO (2015) World Health Statistics 2014. Geneva, World Health Organization.
8. Briones GJC, Cejudo AJ, Gomez-Bravo TE, Morales EJG, Diaz de Leon PM (2002) Medicina crítica en obstetricia. Simposio. Academia Mexicana de Cirugia. Ed. Diseno Grafico. Mexico 161-172.
9. Briones GJC, Diaz de Leon PM (2011) Muerte materna y medicina critica. Rev Asoc Mex Med Crit Ter Int 2: 56-57.
10. Diaz de Leon PM (1994) Incidentes adversos en medicina critica. Cir Ciruj 3: 105-112.
11. Aguirre GHB, Briones GJC, Anda AB (2013) Analisis de la muerte materna en Mexico. Coleccion Medicina de Excelencia Mortalidad Materna. Mexico. Ed. Alfil. 2013, pp. 13-26.