GynObstetrik

Maternal mortality

Health Department

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Abstract

The aim of this report: Analysis of maternal mortality as well as to highlight the attributing factors for maternal mortality in a global perspective, and possible preventive steps that might reduce the maternal death in more efficient way in order to live up to the Millennium Development Goal of the UN.

Methods and material: The study design for this report is a literature review with a qualitative approach that analyses the maternal mortality worldwide as well as putting the main reasons for mortality in focus for future actions in order to eliminate death we can easily prevent.
In total 12 sources (books, articles, and reviews) have been accessed through Uppsala University library as well as with the help of online search on the topic.

Results and conclusion: The reduction of maternal mortality is a process which theoretically easy to establish and keep it running toward right direction due to its low costs solutions and its tools are open-access documents that can be utilized anywhere in the world. Most importantly, in order to fulfil the UN Millennium Development Goals by the year 2015, it will take a significantly increased number of skilled health-care personals, mainly in developing regions of the world. Despite all that, the progress moves slowly.

Keywords: Maternal mortality, Millennium Development Goal, reduction, reasons.

Introduction

A maternal mortality is defined by the International Classification of Diseases (ICD) as the death of a woman while pregnant or within 42 days after abortion, miscarriage or delivery that are due to direct or indirect maternal cause. According to the World Health Organization (WHO) the maternal mortality is the death of a woman during pregnancy, childbirth or in the 42 days of the puerperium irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, excluding incidental death from causes unrelated to pregnancy such as death from accidents or malignancy (WHO 2005a) [1].

Region	Maternal mortality ratio (maternal deaths per 100,000 live births)	Number of maternal deaths	Lifetime risk of maternal death, 1 in:
WORLD TOTAL	400	529,000	74
DEVELOPED REGIONS*	20	2,500	2,800
Europe	24	1,700	2,400
DEVELOPING REGIONS	440	527,000	61
Africa	830	251,000	20
Northern Africa**	130	4,600	210
Sub-Saharan Africa	920	247,000	16
Asia	330	253,000	94
Eastern Asia	55	11,000	840
South-central Asia	520	207,000	46
South-eastern Asia	210	25,000	140
Western Asia	190	9,800	120
Latin America and the Caribbean	190	22,000	160
Oceania	240	530	83

* Includes, in addition to Europe, Canada, the United States of America, Japan, Australia and New Zealand, which are excluded from the regional totals.
** Excludes Sudan, which is included in sub-Saharan Africa.

Tabel 1. Maternal mortality estimates by United Nations MDG regions, 2000 [1].

According to ICD, the maternal mortality is divided into different categories:

Direct: death resulting from obstetric complications of the pregnant state (pregnancy, labour and puerperium), from interventions, omissions, incorrect treatment or from a chain of events resulting from any of the above.

Indirect: death resulting from previous existing disease or disease developed during pregnancy and which was not due to direct obstetric cause, but was aggravated by the physiological effects of pregnancy. Includes deaths consequent on psychiatric disease, suicide and homicide.

Late: deaths occurring between 42 days and 1 year after termination of pregnancy, miscarriage of delivery that are due to direct or indirect maternal causes.

Incidental: deaths from unrelated cause which happen to occur in pregnancy or the puerperium, such as passenger in a motor vehicle accident [2].

In 1987, three United Nations (UN) agencies, United Nations Population Fund (UNPFA), the World Bank and the (WHO), launched the Safe Motherhood Initiative to raise awareness about the numbers of women dying each year from complications of pregnancy and childbirth and to challenge the world to do something [3].

The importance of maternal health was again addressed by the international community when it met in 2000 and agreed on eight Millennium Development Goals (MDGs) aimed at ending extreme poverty worldwide by the year 2015. MDG 5 focused specifically on improving maternal health—setting a target of reducing maternal mortality levels by three-fourths. In 2007, in recognition to the close links between maternal health and other reproductive condition, a second target ensuring universal access to reproductive-health services was added to MDG 5. Recently, some progress on the reduction of maternal mortality worldwide has been reported: a study published in April 2010 in the Lancet shows that the number of annual maternal deaths worldwide declined from roughly 525.000 in 1980 to about 343.000 in 2008 [4].

A UN report recently released confirms the maternal mortality decline, providing an estimate of 358.000 maternal deaths in 2008. This represents a 34% decline from the 1980 levels. This was a great sign that the hard work and investment over the last many years are finally paying off. That result also signals that more effort and resources being directed toward this catastrophic problem will help; it is a cause for hope but, more than that, an impetus to invest in women's lives. The troubling news in these two studies is that progress has been unequal: while many countries are showing a downwards trend, in some, maternal deaths actually increased. The United States is one of these countries showing a striking 96% increase in the maternal mortality ratio between 1990 and 2008 [5].

Measures of maternal mortality

There are three distinct measures of maternal mortality in widespread use:
The *maternal mortality ratio*, the *maternal mortality rate* and the *lifetime risk of maternal death.*

The most commonly used measure is the maternal mortality ratio, that is the number of maternal deaths during a given time period per 100.000 live births during the same time period. This is a measure of the risk of death once a woman has become pregnant. The maternal mortality rate, that is, the number of maternal deaths in a given period per 100.000 women of reproductive age during the same time period, reflects the frequency with which women are exposed to risk through fertility.
The lifetime risk of maternal death takes into account both the probability of becoming pregnant and the probability of dying as a result of that pregnancy cumulated across a woman's reproductive years. In theory, the lifetime risk is a cohort measure but it is usually calculated with period measures for practical reasons. It can be approximated by multiplying the maternal mortality rate by the length of the reproductive period (around 35 years). Thus, the lifetime risk is calculated as $[1-(1-\text{maternal mortality rate})^{35}]$ [6].

Existing state of knowledge on complications due to pregnancy and childbirth

WHO has estimated mortality risk during childbirth, with no health care available, is about 3% which is lower than the current figure of 6.5% maternal mortality in rural areas of Afghanistan, with other numbers 6.500 per 100.000 births. Comparatively varies maternal death talks between one and six per 100.000 births in Sweden. Differences become even more pronounced if an account of the woman throughout her reproductive life cycle (figure 1).
That geographical distribution of mortality depends on the one major reason, the so called poverty Pathology (figure 2.) [7].

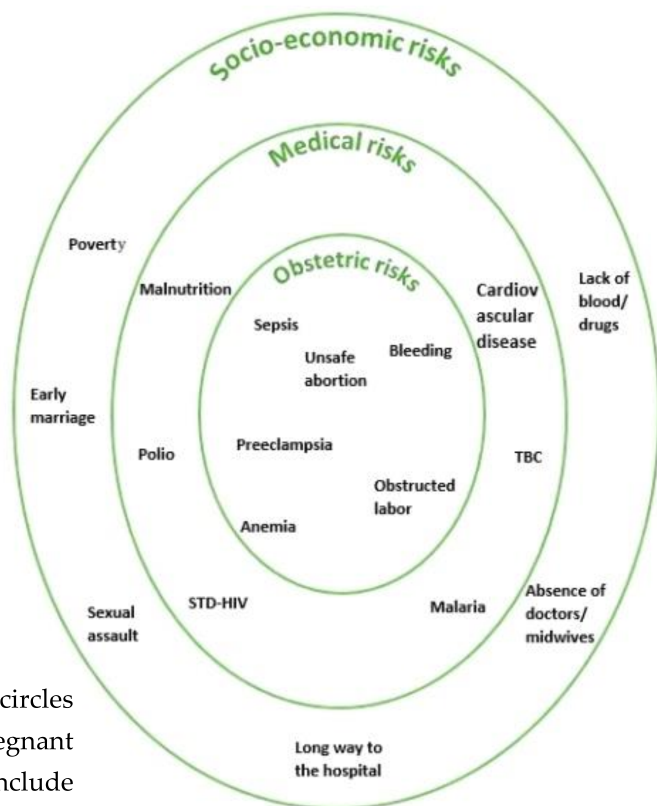


Figure 1. Schematic figure with the circles illustrating the reproductive cycle of pregnant women in developing countries, which include medical, legal and social risks [7].

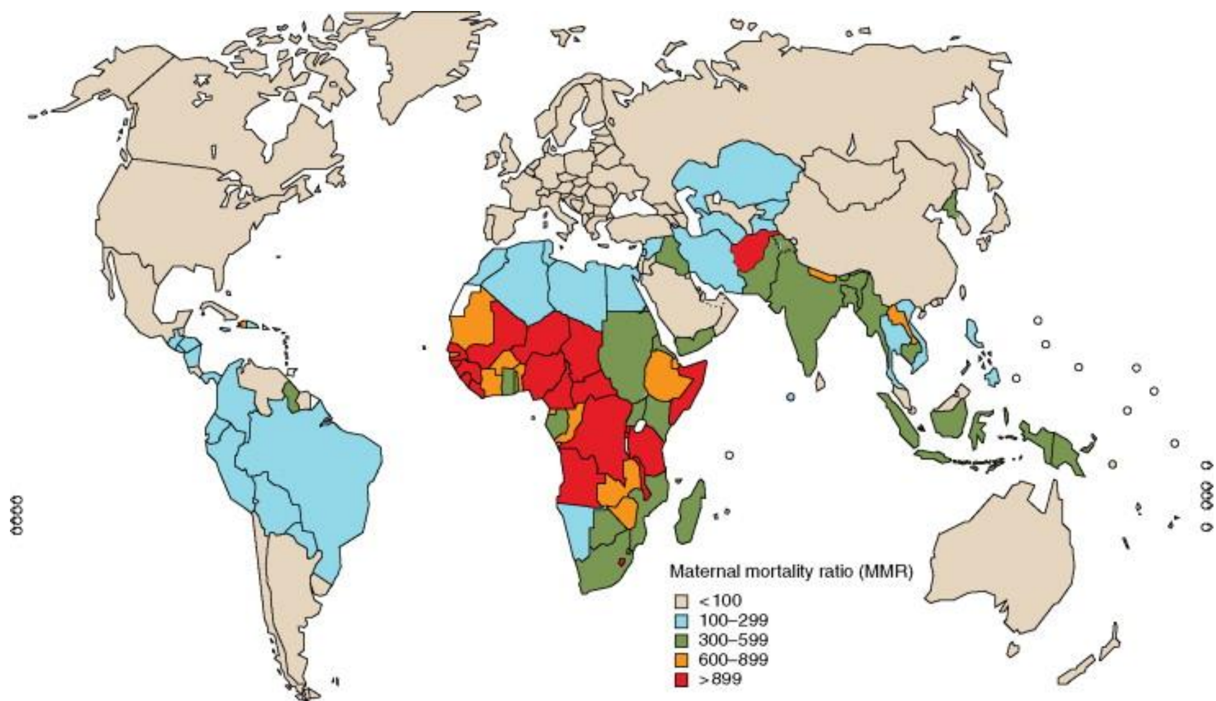


Figure 2. Maternal mortality ratios in countries [8].

Pathophysiology, diagnosis and management of the pregnant are the same in all countries, but the prospect to make the right diagnosis, access to cure and understanding of causation, which is much broader and more complex than what is included in the school medical textbooks [7]. Those factors put together create the prerequisite for complications during and following pregnancy and childbirth. Most of these complications develop during pregnancy. The major complications that account for 80% of all maternal deaths are:

- Severe bleeding (mostly bleeding after childbirth)
- Infections/sepsis (usually after childbirth)
- Preeclampsia and eclampsia (high blood pressure during pregnancy)
- Obstructed labor
- Unsafe abortion.

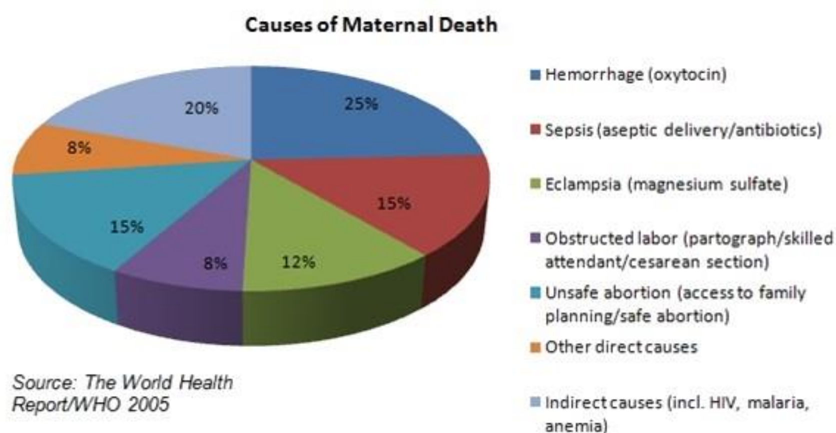


Figure 3. The major complications that account for 80% of all maternal deaths.

The remainder are caused by or associated with diseases such as malaria, and AIDS during pregnancy.

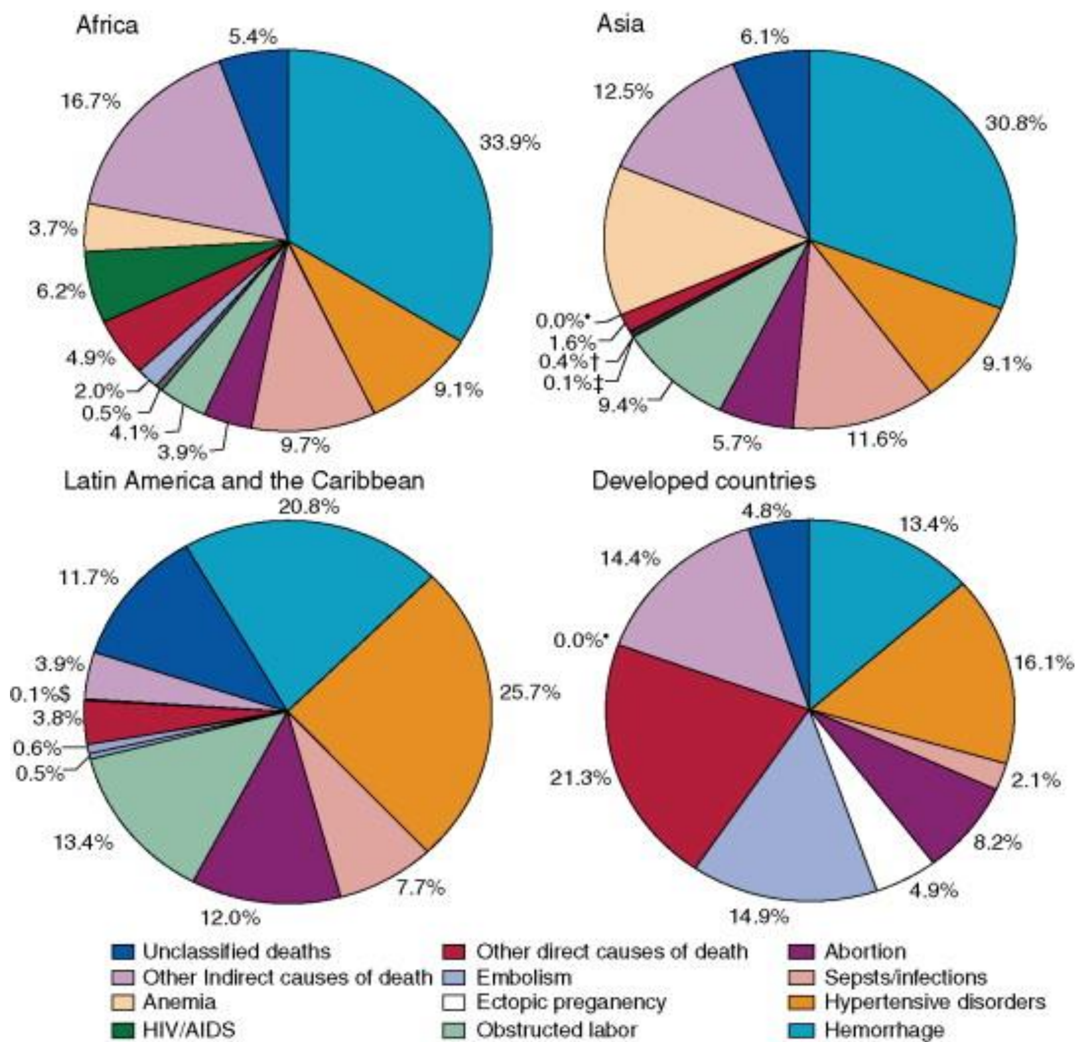


Figure 4. Cause distribution of maternal deaths in world regions [9].

Aim of this report

Analysis of maternal mortality as well as to highlight the attributing factors for maternal mortality in a global perspective, and possible preventive steps that might reduce the maternal death in more efficient way in order to live up to the Millennium Development Goal of the UN.

Methods

The literature review is the main method of the research which has a qualitative approach. Besides research methods consist of data collection and data analysis. First the data was collected through review of academic articles from the recognized scientific magazines published online as well as documentation from health organizations. Articles were mainly collected though Uppsala University bibliographic search online using keywords ("maternal mortality", "decreasing maternal mortality", "statistics on global maternal mortality"). Then the data was analysed from the perspective of factors that contribute to maternal mortality in a global perspective as well as lead to solutions to decrease it.

The limitations of the study are:

The research has a descriptive design and mainly limited to literature review however it is challenging to access data from some countries due to lake of documented cases.

Terminology:

Perinatal deaths are classified according to their aetiology and not by the immediate cause of death. The accurate determination of the specific factors leading to the neonatal death enables health professionals to identify correctable problems [2].

The United Nations Population Fund (UNPFA) has estimated that around 80 million females of different age each year, become pregnant unplanned or pregnant against their will, and in addition to this there are approximately 200 million women have no access to any form contraception agents.

Ending pregnancy in an insecure way increase the risk of bleeding and sepsis. These unsafe methods of abortion cause 13-20% of the world's maternal deaths (figure 4). Early start of sexual life, teen pregnancy and repeated/untreated salpingitis*, increase incidence of ectopic pregnancies**.

**Salpingitis* is inflammation of the fallopian tubes due to bacterial infection.

***Ectopic pregnancy* occurs when an embryo implants somewhere other than the uterus, such as in one of the fallopian tubes.

All factors are directly or indirectly related to each other in the female reproductive cycle (figure 1). Woman's age and number of pregnancies increases the risk of premature death [7].
Taking into account the above mentioned facts enable us to predetermine factors for maternal mortality giving us the opportunity to focus on health-care solutions to prevent or manage those complications in every possible way to minimizes deaths we could've avoid.

Theoretical framework

According to the UN MDGs the decreasing of maternal mortality should be clearly acknowledge today when time for the dead line of MDGs is running out. Hence all women across the globe should have the access to maternal health care by the end of 2015. Less than two years left for the MDGs and the numbers still high over and above some of the continents still lacking maternal healthcare.
On the other hand and according to Coeytaux, F. et al, (2011) some progress on the reduction of maternal mortality worldwide has been reported. Coeytaux (2011) highlights as well a study published in April 2010 in the Lancet, shows that the number of annual maternal deaths worldwide declined from roughly 525.000 in 1980 to about 343.000 in 2008. Moreover a UN report was recently released confirms the maternal mortality decline, providing an estimate of 358.000 maternal deaths in 2008. This represents a 34% decline from the 1980 levels. This is clearly a sign that the hard work and investment over the last many years are finally paying off. It also signals that more effort and resources being directed toward this catastrophic problem will help; it is a cause for hope but, more than that, a great motivation to invest in women's lives.
On the other hand interferes the bad news with the above mentioned progress showing that the progress has been unequal: while many countries are showing a downwards trend, in some, maternal deaths actually increased. What is more alarming is that this increasing affect not only third world countries but even in some The United States is one of these countries showing a striking 96% increase in the maternal mortality ratio between 1990 and 2008 [5].
According to Rogers W. et al. the increasing ratio in maternal mortality in the United States is strongly related to factor of ethnic origin due to the high numbers of unsafe induced abortions and ectopic pregnancies.

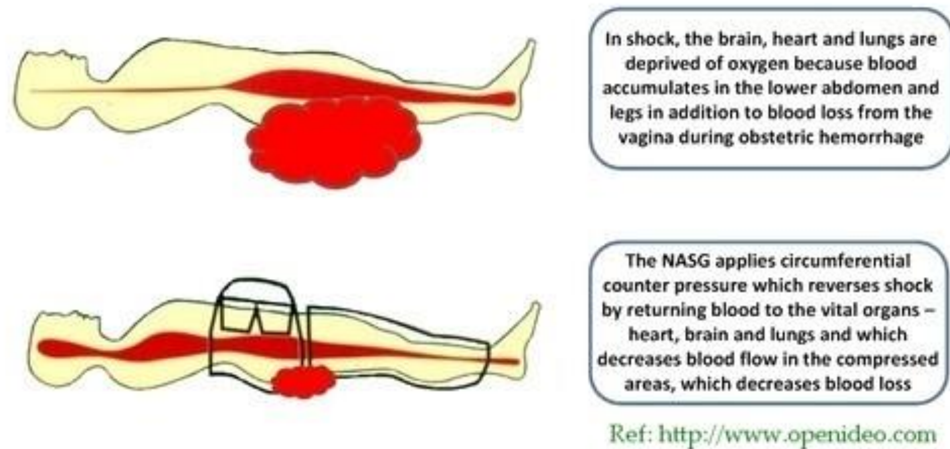
Solutions to decrease maternal mortality

1. **Make contraception accessible and affordable**
   Methods of contraception are cheap, empowering and life-saving technology (in particular the birth control pill) which unfortunately, are inaccessible or prohibited in many countries. According to the UNPFA, about 200 million females globally do not have access to any form of contraception methods [10]. The fact that so many women around the world do not have access to modern contraception is a gross violation of human rights [11].

2. **Legalise abortion and make it accessible**
   Giving females the power to manage their reproductive lives in a legal and safe way (safe abortion). The benefits of legalizing abortions can be huge and according to WHO, an estimated 20 million unsafe abortions take place every year resulting is statistics of at least 68.000 women annually die worldwide from complications and another estimated 5 million women per year suffer long-term injuries.
   Legalising safe abortion and make it accessible make up about a fifth of maternal deaths worldwide which continues to be among the most effective strategies for saving women's lives [11].

3. **Improve maternal care**
   Early pregnancy screening and follow up, are two essential figures in maternal and infant survival though pregnancy, which unfortunately that absence in many developing countries and at least third of pregnant women have no contact with maternal health-care before they deliver, and 57% of births occur without a skilled attendant present [10]. The assistance of skilled attendants who are trained to identify and manage complications and refer patients to emergency obstetric care if needed can literally mean the difference between life and death for both woman and child.
   Many health facilities desperately need vital medical supplies such as antibiotics, uterotonics (i.e., *Oxytocin* or *Misoprostol* to minimize postpartum bleedings) and magnesium-sulfate (for eclampsia); safe blood supplies and better transportation services to emergency obstetric care as well as increasing access to life-saving technologies for women who give birth outside health facilities (e.g. the non-pneumatic Anti-Shock Garment for postpartum bleeding can save lives (figure 5) [11].

Figure 5. Non-pneumatic Anti-Shock Garment for postpartum bleeding



4. **Eliminate harmful practices**
   Eliminating the exposure to unnecessary and harmful procedures if possible will decrease maternal mortality in a significant way, that includes the excessively usage of C-sections in many countries. C-Section is a major surgical procedure which can associates with many risks such as infection, massive bleedings and organ injuries [12], [13].

Discussion

When is it the right time to save women's lives? Do we need right time to start saving their lives? Today, it is less than 2 years away from reaching the UN Millennium Development Goals of 2015, most countries limping forward; others stand still and some even going backward not only in developing countries but in some industrialized countries such as the United States, according to Rogers, W. et al. most importantly is that the underlying cause of maternal mortality are the same only the percentage of their expression differ between continents (figure4). The above suggested solutions to minimize the maternal mortalities are today not only cheaper than before but also well established and documented in many languages all around the globe and despite all this progress moves slowly. Although over the last few years, work on maternal health has significantly increased in a global perspective. Worthy to mention is the reduction of maternal mortality from 358.000 in 2008 to 287.000 in 2010. It is the result of global collaboration to ensure that all women access the life-saving knowledge and technologies that can prevent and treat most pregnancy and delivery complications, and that proves the theoretical statement of Coeytaux (2011).

Recommendations

Most importantly, in order to fulfil the UN Millennium Development Goals by the year 2015, it will take a significantly increased number of skilled health-care personals, mainly in developing countries in the world.

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