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Maternal mortality and morbidity: Epidemiology of intensive care admissions in pregnancy

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Maternal mortality reviews are used globally to assess the quality of health-care services. With the decline in the number of maternal deaths, it has become difficult to derive meaningful conclusions that could have an impact on quality of care using maternal mortality data. The emphasis has recently shifted to severe acute maternal morbidity (SAMM), as an adjunct to maternal mortality reviews. Due to its heterogeneity, there are difficulties in recognising SAMM. The problem of identifying SAMM accurately is the main issue in investigating them. However, admission to an intensive care unit (ICU) provides an unambiguous, management-based inclusion criterion for a SAMM. ICU data are available across health-care settings prospectively and retrospectively, making them a tool that could be studied readily. However, admission to the ICU depends on many factors, such as accessibility and the availability of high-dependency units, which will reduce the need for ICU admission. Thresholds for admission vary widely and are generally higher in facilities that handle a heavier workload. In addition, not all women with SAMM receive intensive care. However, women at the severe end of the spectrum of severe morbidity will almost invariably receive intensive care. Notwithstanding these limitations, the epidemiology of intensive care admissions in pregnancy will provide valuable data about women with severe morbidity. The overall rate of obstetric ICU admission varies from 0.04% to 4.54%.

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Introduction

Maternal deaths are studied almost globally to assess the quality of health care of a country. Most countries with organised health-care systems would have a national maternal mortality audit in place, while the others will at least be striving towards one [1,2]. With improved health resources, maternal mortality has declined significantly over the past few decades. This relatively low incidence limits the value of maternal mortality data as a tool for deriving meaningful clinical conclusions. Even in resource-poor settings, where maternal mortality figures are relatively higher, maternal mortality data have been described as one of the worst-performing health indices [3]. In order to improve the quality of a maternity care service, periodic reviews or audits of other parameters have now become necessary. Audits of severe maternal morbidities alongside maternal mortality reviews are now gaining ground for this purpose [4,5].

A classic example of this approach is the Confidential Enquiries into Maternal Deaths (CMED) in the UK, which has observed a clearly documented fall in maternal mortality ratios over the past 50 years [1]. With the fall of maternal mortality rates to 7 per 100,000 in the early 1990s, it was recommended that maternal morbidity, in its severe form, should be audited [4]. In the year 2000, the 1997–1999 triennial report of the CMED in the UK included a chapter on 'near-miss and severe maternal morbidity' for the first time [6].

There are difficulties in defining and recognising women who would fit into a definition of severe maternal morbidity. However, a woman who was admitted to an intensive care unit (ICU) could be considered to have suffered severe maternal morbidity. This chapter examines the importance and limitations of studying the epidemiology of intensive care admissions in obstetrics.

The major global causes of maternal deaths are post-partum haemorrhage, severe pre-eclampsia/eclampsia, obstructed labour, puerperal sepsis and unsafe abortion. However, the incidence of each of these may vary between countries and may be determined to a good extent by the availability of resources. Two studies from Nigeria and West Africa showed that, in addition to haemorrhage and hypertension, obstructed labour and sepsis remain significant risks to the mother [7,8]. It is common knowledge that most women with these pregnancy complications would survive with intensive care available to them. A study of such patterns, causes and effects of health and disease allows informed and evidence-based policy decisions to be made for optimal utilisation of finite resources. At present, robust evidence on the incidence of severe maternal morbidities is limited. A recent Cochrane review on critical incident audit and feedback to improve perinatal and maternal mortality and morbidity revealed that there were no suitable randomised controlled trials in this regard [9]. In order to audit the maternal morbidity outcome, certain predefined outcome measures are needed. A review of epidemiology of obstetric critical care was earlier published in the same journal and it reviewed available literature for 20 years from 1980 to 2004 [10]. Here, we describe recent evidence on the same topic with special emphasis on trends in the epidemiology of obstetric critical care.

Terminology

Severe obstetric morbidity was earlier referred to as 'near misses', a terminology that originated in the aviation industry where it described a critical event where no loss of life or collision occurred. In obstetrics, it implies any severe morbidity due to any cause related to or aggravated by pregnancy or its management but not due to accidental or incidental causes regardless of the site or duration of the pregnancy, up to 42 days from delivery [11]. Filippi et al. defined it as a severe life-threatening obstetric complication necessitating an urgent medical intervention in order to prevent the likely death of the mother [12].

Mantel et al. defined a woman with severe acute maternal morbidity (SAMM) as "a very ill pregnant or recently delivered woman who would have died had it not been but luck and good care was on her side [13]."

A systematic review conducted by the World Health Organization (WHO) on severe maternal morbidity and maternal near-miss cases in 2003/2004 emphasised a substantial heterogeneity in terminology and definitions used in obstetric morbidities [3,14]. As a result, it established a technical working group comprising obstetricians, midwives, epidemiologists and public health-care