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IMPROVING MATERNAL HEALTH

Global progress and potentially effective policy responses to reduce maternal mortality ☆

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ABSTRACT

Reducing maternal mortality within significant margins is a global imperative that reflects attainment of development goals. Progress in reducing maternal mortality, in particular among countries with notably high maternal mortality ratios (MMRs), has been substantially slower than the Millennium Development Goal target of an annual rate of 5.5% decline. The latest UN maternal mortality estimates show a reduction in MMR in a number of countries between 1990 and 2008. Understanding the factors associated with progress in countries that have reduced maternal mortality provides other countries and development partners with opportunities to consider and implement policies and interventions that could help accelerate progress. This paper reviews 6 countries that have demonstrated marked progress. The policies that have been effective include innovative financing measures; investment in human resources both in terms of strengthening pre-service education and emphasizing in-service training for healthcare providers; strengthening obstetric care by enhancing infrastructure and upgrading equipment, as well as improving quality of services; and investing in the broader determinants of maternal mortality, particularly family planning and women's education and socioeconomic empowerment. This range of actions, which includes a combination of facility and community-based approaches, provides a list of potentially effective strategies that could be considered when developing programs in other countries with slower progress. Strong political will and multistakeholder involvement and interventions are key in the development and implementation of these policies and actions.

1. Introduction

Maternal mortality represents an unfair and persistent problem in many low-resource countries. Reduction of maternal mortality is a key indicator of development, and 1 of the 6 indicators used to track the progress of Millennium Development Goal (MDG) 5. Latest UN estimates show that an estimated 358 000 deaths occurred owing to pregnancy-related complications worldwide in 2008 [1]. Variable, but inadequate progress was noted in prevention of these deaths between 1990 and 2008 [2]. During this time, the maternal mortality ratio (MMR)—the number of maternal deaths in relation to live births—has been reduced by an annual average of 2.3%. However, this is less than half of the 5.5% annual decline required if the MDG 5 target of a 75% reduction in MMR between 1990 and 2015 is to be achieved [2].

1.1. The global picture and progress

Differential rates of progress in reducing maternal mortality have been seen across regions (Table 1) [3]. In all of the MDG subregions of Asia, it is estimated that the MMR declined by 4% or more per year over the period 1990 to 2008. For the region as a whole, the MMR declined at an estimated rate of 4% per annum. In contrast, the estimated annual rate of decline in Sub-Saharan Africa was only 1.7%. From 1990 to 2008, the annual number of births in Asia decreased by 0.5% per year (falling from 82 to 74 million), whereas in Sub-Saharan Africa the total number of births increased by 1.5% per year (rising from 23 to 32 million). The slower progress in reducing the MMR in Sub-Saharan Africa relative to Asia, coupled with an increasing number of births, has resulted in a major regional shift in the burden of maternal mortality over years. In 1990, roughly 58% of global maternal deaths occurred in Asia and 36% in Sub-Saharan Africa; by 2008, this picture had largely reversed, with an estimated 39% of global maternal deaths occurring in Asia and 57% in Sub-Saharan Africa.

The majority of maternal deaths are caused by 4 major direct conditions: obstetric hemorrhage, hypertensive disorders of pregnancy, complications of unsafe abortion, and puerperal-related sepsis [4]. Effective clinical interventions to prevent and manage all of these conditions exist. However, it has long been a challenge to ensure that

☆ The opinions stated in this paper are those of the authors and do not necessarily represent the views of the World Health Organization or its member countries.

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Table 1
Levels and average annual rates of decline in maternal mortality ratio (MMR) from 1990 to 2008 for the world and regions.

Region	MMR per 100 000 live births (95% uncertainty interval)		Average annual decline, %
	1990	2008	
World	400 (290–580)	260 (200–370)	2.3
Developed regions	16 (15–20)	14 (13–16)	0.8
Commonwealth of Independent States	68 (60–81)	40 (34–48)	3.0
Developing regions	450 (330–660)	290 (220–410)	2.3
Africa	780 (550–1200)	590 (430–850)	1.6
Northern Africa	230 (150–360)	92 (60–140)	5.0
Sub-Saharan Africa	870 (610–1300)	640 (470–930)	1.7
Asia	390 (270–580)	190 (130–270)	4.0
Eastern Asia	110 (66–190)	41 (27–66)	5.5
Southern Asia	590 (390–920)	280 (190–420)	4.2
South-Eastern Asia	380 (260–600)	160 (110–240)	4.7
Western Asia	140 (88–240)	68 (45–110)	4.0
Latin America and the Caribbean	140 (120–190)	85 (72–100)	2.9
Oceania	290 (130–660)	230 (100–500)	1.4
MDG 5 Target			5.5

these interventions reach women when and where they are needed, and there are a number of reasons for this. First, implementation of effective maternal healthcare interventions requires existence of a well-functioning healthcare delivery system with various inputs in place, which is usually limited in low-resource settings. Second, in some settings, policy issues or cultural and behavioral factors might impede women's use of health services, thereby limiting access to effective interventions. Finally, there is insufficient information from resource-limited countries that have reduced maternal mortality on the strategies that have been implemented effectively to address the multiple barriers to receipt of effective care.

Despite insufficient progress and barriers to reducing maternal mortality, the trends in maternal mortality levels, especially for some countries, are encouraging. According to recent UN estimates, among the 87 countries whose maternal mortality ratios were higher than 100 in 1990, 51 were able to register reductions of 40% and greater by 2008, which illustrates that improving maternal health is possible even in resource-limited situations [2]. Various strategies implemented by these countries over the years have contributed to this progress. Documentation of such progress is critical in the global effort to curb maternal mortality. Useful lessons can be drawn to inform policies and programs elsewhere, and to ensure a sustained effort in their implementation.

The present paper explores the strategies that have contributed to reducing maternal mortality in 6 countries that have demonstrated progress, with a view to highlighting potentially effective strategies that might inform policy development in other countries with limited progress.

2. Identification of countries and review of policy responses

Six countries known to have prioritized reproductive health and reducing maternal deaths over the past decades from different low-resource regions were selected from the 51 countries that had high maternal mortality levels in 1990 (estimated MMR >100) but had made more than 40% progress in reducing maternal mortality levels by 2008: Bangladesh, Bolivia, Cambodia, Gambia, Morocco, and Rwanda.

Relevant policy documents, published literature, and responses to a WHO survey on implementation of the WHO "Reproductive health strategy to accelerate progress towards the attainment of international development goals and targets" [5] were reviewed for the 6 selected countries. The findings were applied to a framework used to examine evidence to understand the reduction in HIV prevalence [6]. The aim was to explore responses to the question: What policies/strategies were developed in the country that led: (i) to strengthened health systems shown by, for example, improved governance, strengthened human resources, innovative financing, and expanded service delivery for implementation of specific interventions; and (ii) to demand-side barriers being addressed, which led to increased use of health services (that prevented and/or improved management of complications) resulting in a reduction in maternal mortality?

3. Progress and strategies contributing to reductions in maternal mortality

Impressive improvements were seen in the process indicators related to the use of health services in the 6 selected countries. Specifically, the proportion of births attended by a skilled healthcare worker increased remarkably from 50% to 73% in Bolivia, from 34% to 68% in Cambodia, from 36% to 71% in Morocco, from 23% to 47% in Rwanda, and from 40% to 60% in Gambia between 1990 and 2008 [7]. Conversely, the estimated decline in MMR in Bangladesh does not correspond to improvements in access to delivery care and healthcare use indicators. Births attended by skilled health workers in Bangladesh remained at 26% in 2008 despite an increase from 8% in 1990 [7]. However, other healthcare indicators that are associated with reduced maternal mortality have improved in Bangladesh. Specifically, contraceptive use increased from 40% in 1991 to 56% in 1997. Contraceptive use also increased impressively in Morocco, from 42% to 63% over a 10-year period from the mid-1990s [8].

Policies to promote increased use of reproductive and maternal health care varied. For example, Cambodia employed strategies aimed at increasing the proportion of deliveries attended by a skilled healthcare worker, particularly at healthcare facilities [8]. Before designing the strategies, research was carried out to understand the barriers to giving birth with a skilled healthcare worker present. This revealed a number of barriers, on both the supply and demand sides, which included: shortage of midwives, unwillingness of healthcare providers to work in rural areas, low salaries, limited resources to retain trained midwives, lack of equipment, costs, transportation problems, traditional practices, and providers' attitudes. To address these barriers, demand-side financing mechanisms were introduced. In addition, healthcare provision was strengthened by establishing safe delivery incentives for providers, introducing essential delivery packages, administrative reforms to improve the status of midwives, increasing the number of health facilities in line with the health coverage plan, and increasing the intake of midwifery schools [8].

Bolivia implemented an insurance scheme from the mid-1990s that eliminated user fees for prenatal, delivery, and postnatal care, including management of complications and cesarean delivery. Later on the scheme was expanded to include postabortion care and emergency referral. This strategy targeted and had the greatest impact on increasing the use of skilled care for births in rural areas and among the poorest segment of the population, thereby, reducing inequalities [9].

Gambia also made maternal health services free for all Gambians. In addition, strategies to strengthen health services were applied; for example, midwifery training was upgraded and emergency obstetric care training was carried out for doctors, nurses, and midwives. Simultaneously, comprehensive emergency obstetric services were scaled up. Another major strategy employed to strengthen health care and increase uptake of services was expansion of the reach of reproductive health care to communities.

Morocco has long placed emphasis on policies that strengthen family planning and increase women's education [10]. Beginning in the late 1980s, several programs with a specific focus on reducing maternal mortality were developed. The 1987 monitoring of pregnancy and childbirth program set targets to cover prenatal care and childbirth in a monitored setting. The 1995 emergency obstetric and neonatal care program adopted the 3 delays model and was targeted at improving the availability of quality care for obstetric and neonatal