

CENTRE FOR SEXUAL AND REPRODUCTIVE HEALTH

MATERNAL MORTALITY AND POVERTY

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by

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Acronyms and abbreviations

BEOC	Basic Essential Obstetric Care
CEOC	Comprehensive Essential Obstetric Care
DHS	Demographic and Health Survey
GNP	Gross National Product
IIPS	International Institute for Population Services
MMR	Maternal Mortality Rates
ORC	Opinion Research Company
WHO	World Health Organisation

1. Introduction

The problem of high rates of maternal mortality has proved difficult to tackle in many developing countries. International development targets that seek to reduce maternal deaths have yet to be reached. The recent call for an increase in skilled medical attendance at delivery marks a new emphasis of international attention (Starrs, 2000); as previous remedies such as the training of traditional birth attendants and antenatal risk screening having largely failed to make a significant impact on the continuing toll of maternity-related deaths (Bergsjö 2001, Bergstrom and Goodburn, 2001). This new direction brings the important aspects of health system investment, quality of care and poverty-constrained access into sharper focus (Hulton et al, 2001).

Historical and more recent evidence from both developed and developing countries has suggested that professionalisation of delivery care provides the key to reduction of maternal mortality (Van Lerberghe and De Brouwere, 2001). However, this investment in human resources has three important components which need to work together for the prevention of deaths. These are:

- a) The existence of an extensive midwifery cadre which is well trained, autonomous, and embedded in the referral system;
- b) Adequate facilities for institutional deliveries, and
- c) An implemented strategy to support widespread access to these services

As institutional deliveries are far from universal in most developing countries, the midwifery component of this is required to take the form of outreach for domiciliary births, sometimes serving large areas of remote rural hinterland. Graham (2001) has made the point that this new consensus implies not only skilled attendants but a broader concept of skilled *attendance*, which emphasises that skilled personnel cannot react to emergencies without the backing of drugs, supplies and functioning health systems. Epidemiological evidence from a range of historical and contemporary settings has suggested that the maternal mortality rate can be halved in a decade by successfully implementing a) as described above, and halved again by the provision of maternity hospitals as described in b). Clearly these interventions can be expected to be very powerful, but the access ingredient is a necessary precondition for a successful programme, and it is access which can be poverty-related.

The relationship between poverty and maternal mortality is thus not straightforward, as the provision of outreach and hospital facilities can be made in resource poor environments given the political will, consumer demand and the prominence of maternal mortality monitoring. That countries can reduce MMRs in the face of adverse socio-economic conditions has been highlighted in recent years, demonstrated by the finding that countries with Gross National Product (GNP) levels of less than US\$1,000 can have MMRs that vary between 22 and 1,600 (Derveeuw et al, 1999). For example in the 1990s, with a GNP of less than US\$1,000, Vietnam's MMR was 160 and Nepal's 1,500. However, it remains true that most maternal deaths do occur in poor countries, and that poor women have the least access to skilled attendants. Add to this the gender dimension, which has a particularly adverse effect in Asian countries, and the question of poverty-constrained access becomes as important as the health systems improvements that are required to have any impact on the continuing loss of maternal lives.

2. Skilled attendance and maternal mortality rates

Globally, maternal mortality stands at 430 deaths per 100,000 live births (Department for International Development (2001)). Regional totals are even more alarming, at 610 per 100,000 live births for south Asia, and 980 for sub-Saharan Africa. (These are 1990 figures, but there is little evidence of a downturn since then). A three quarters reduction over the next fifteen years, as agreed at the Millenium Summit of Nations, is achievable, but progress looks set to be slow at least at first. Table 1 shows maternal mortality ratios (MMRs) for selected Asian and other developing countries, which highlights the extent of the problem, especially given the marked comparison with MMRs from European and other developed countries, sometimes as small as one hundredth of the magnitude of developing country rates. The extent of the divide between the developed and developing world is unparalleled in any other development indicator; child mortality showing differences of the order of tenfold, rather than one hundred.

It should be noted that all MMRs are subject to many problems of estimation, as maternal death has a complex definition and it is a relatively rare event, needing survey samples of many thousand before reasonable precision can be reached. Most countries listed in Table 1 do not have sufficient birth and death registration with which to calculate rates accurately, and so survey data is generally used. The calculation of skilled attendance at delivery, although relying largely on self report by women, has less inherent problems, and is seen as a proxy for maternal mortality (there is much evidence which points to a close correlation with MMR, see Starrs 2000 for a review). Additionally, it is seen as an indicator which, if monitored, will promote both human and systems development and investment. Furthermore, it is a measure of access, and has been shown to be related to economic status (Kunst and Houweling, 2001).

3. Maternal health service characteristics

The last fifteen years has seen a growing awareness of the unique dimensions of maternal health service provision, as distinct from child health services. The acknowledgement that maternal deaths are avoidable, coupled with the understanding that intrapartum and pregnancy complications strike to some extent indiscriminately, has led to the conceptualisation of good maternity care as access to basic and comprehensive obstetric care facilities with the minimum of delay (WHO, 1997). Once a complication has occurred, delays can be attributed either to lengthy decision-making on the part of women and their families, long transfer times to facilities or to hold-ups within facilities themselves (Thaddeus and Maine 1994). For the most part, a systems approach to the widespread provision of good quality care will go a very long way to shortening all three of these delays.

In terms of service provision, the WHO recommend a minimum acceptable level of emergency obstetric care that can be accessed in the intrapartum period or, if a crisis arises, during pregnancy or the postpartum period (WHO, 1997). For every 500,000 people, there should be one facility providing a comprehensive range of obstetric services, including Caesarian section and blood transfusions (Comprehensive Essential Obstetric Care or CEOC). In addition there should be four facilities, serving

the same population, providing a more basic level of services (Basic Essential Obstetric Care or BEOC).

The disparate set of possible complications of childbirth, all with very different solutions, is also a singular feature of maternal health. These complications are estimated to affect around 15% of women almost regardless of other predisposing factors (WHO 1997). The most common serious conditions, which can lead to death, are haemorrhage, sepsis, hypertension, anaemia and abortion-related problems (often also actually haemorrhages). The incidence of these complications is to a great extent, not related to poverty, although some linkages can be made. For example, less wealthy people tend to suffer more from anaemia, due to poor nutrition (this is particularly the case in Asia, where anaemia is a persistent problem). This may also have a knock on effect to the risk of haemorrhage for poorer people. Abortion-related risk is likely to be more marked among poorer populations, who cannot afford the private provision which is generally the only option available. Certainly hypertension is not poverty-related and potentially differential rates of sepsis are debatable. A domiciliary environment may increase the risk of contaminants, but iatrogenicity (infection via medical attendants or procedures) linked with needless and poorly performed medical intervention should not be underestimated for those who can access medical attendance. (Maternal mortality was higher among wealthier women in historical European populations due to infections spread by midwives and doctors, see Loudon 1992).

The important issue here is not the occurrence of the complication itself, which is determined only very weakly by various risk factors, but the reaction of women and their carers (both relatives and medically trained personnel) to complications which are usually entirely unexpected. Such reactions are clearly related to poverty.

4. Inequalities in maternal care uptake

The influence of wealth status on the chain of events following a complication can be illustrated by comparing maternal health care utilisation in different population wealth quintiles. Recent work on inequalities in health has effectively linked wealth, as described by the ownership of assets, to health seeking behaviours and to health outcomes (Wagstaff, 2001). However, much of this work has focussed on child health services and child mortality, which clearly require very different service configurations. The finding that higher GNP implies greater average levels of child welfare, but with greater inequalities may not hold for maternal health, or, more likely, the larger inequalities in maternal health outcomes may outweigh any more general gains. Certainly the comparison of child health inequalities and maternal health inequalities tends to show that the uptake of maternal health services is much more divided on the basis of individual economic status than the uptake for child health services, particularly in the Asian context (Arokiasamy, 2001). Table 1 shows that the wealth divide in delivery services is often the widest, as compared with child health services and antenatal care contacts, reflecting the potentially costly interventions that are sometimes unexpectedly required during the intrapartum period.

Gwatkin et al (2000), however, have calculated delivery care utilisation by wealth quintile, based on self reported asset ownership from Demographic and Health

Surveys. The richest and poorest quintile values for selected Asian and other developing countries are shown in Figure 1. Actual population outcomes, such as maternal mortality and morbidity, have not however been calculated by wealth quintile. This would provide evidence of the direct link between poverty and maternal outcome, but the exercise is hampered by the large sample sizes required for estimation, which preclude the breaking down of any sample into quintiles. Even taking the Indian DHS sample, which is large (89,000 households were sampled), would not produce reliable maternal mortality ratios for population subgroups (IIPS and ORC Macro, 2000). However, the close correlation of low maternal mortality with skilled attendance at delivery means that examining wealth differentials in skilled attendance can provide a good description of the relationship between maternal mortality and poverty.

From Figure 1 it can be seen that wealth inequalities in skilled delivery attendance can be very wide indeed, especially in countries where the proportion of women delivered by skilled attendants is in the middle range. Taking the difference between the upper and lower wealth quintiles, it can be seen that the inequality can reach a level of up to 80 percent or more (e.g. in Bolivia). These differences are shown in Figure 2. Of the Asian countries, India, the Philippines and Indonesia stand out as highly unequal in terms of maternal health care uptake.

Taking these countries statistics in aggregate form, analysts have sought to explain both skilled attendance and MMR in terms of macro factors such as aggregate literacy rates, Gross National Product (GNP), and health system 'responsiveness scores' (based on WHO definitions of promptness, quality of environment, access to social assistance, free choice of provider, dignity, confidentiality and autonomy, WHO, 2000). It has been found that, in low income countries, although wealth as expressed by GNP and female literacy are predictors of MMR at the country level, health system responsiveness has an explanatory power that is significantly superior to either of these factors (Van Lerberghe and De Brouwere, 2001). This underlines the point that improvements in health systems themselves is a key priority in the battle to reduce maternal deaths.

5. A culture of silence

Looking at survey evidence at the individual level, rather than at the aggregate country level, a more sophisticated picture of the role of poverty in maternal mortality can be obtained. Despite the importance of the provision of Essential Obstetric Care, skilled outreach workers, and health systems more generally, the social backdrop in many Asian countries is a significant barrier to use of services as they are currently configured.

Apart from household wealth status, educational levels of individual women, religion, and caste have been shown to affect the uptake of maternal health and delivery services (Ganapathy 1998, Matthews et al, 2002, Magadi et al, 2002). Additionally, parity, the experience of previous problems, actual need and traditional views of childbirth are all important in determining the care that a woman may ultimately receive at delivery. Levels of women's autonomy, which are lowest in Asian countries, have also been linked with healthcare seeking behaviour at delivery.

Care seeking decisions are often not made by women themselves in a context of low women's status. Key household decision-makers are very important actors in the 'first delay' from complication to skilled care. In many south Asian countries this is particularly true, as birth attendants, even if they have some medical training, often wield little decision-making power, as a result of the low status tasks that they must perform. South Asian women themselves are reluctant to report 'little little' problems (related to intimate conditions in pregnancy or labour) either within their natal or marital homes, where problems such as this are culturally determined as women's failures (see, for example Jeffery and Jeffery, 1989). This 'culture of silence' which prevents health seeking for gynaecological and obstetrical conditions is a feature of the gender dimension of maternal health and it is not confined to south Asia (see Younis et al, 1993, and Abdulghani, 1993 for further examples).

Although the relationship between women's autonomy and wealth status is not straightforward (sometimes very poor women have more autonomy than their slightly richer sisters), the predominance of poor maternal health outcomes in regions and countries where women's status is low often coincides with either a general level of poverty, or high levels of economic inequality.

6. Conclusion

The literature that exists on the relationship between maternal mortality and poverty is in its infancy. The linking of health outcomes and service utilisation rates with indicators of poverty is based only on asset ownership as reported by survey respondents, and this field of measurement is currently developing with the launching of new measurement initiatives (Diamond et al, 2001). Furthermore, the analysis with respect to service use is not yet sophisticated enough to examine the evolution of public versus private care seeking in contexts of poverty. Much of the descriptive evidence available on maternal health care cites numerous examples of the unavailability of trained personnel, which is due not only to the reluctance of doctors, anaesthetists etc to practice in rural facilities, but also to the reluctance of medical organisations and communities to allow mid level service providers to perform routine obstetrics. These factors exacerbate the problem of poverty-constrained access to care.

Finally, it is worth mentioning that public information (in the form of routinely collected data and surveys of populations), political will and consumer pressure all play a very important part in the battle against maternal deaths. These are not directly related to poverty, but a wealthier population will insist on higher quality of care, and this is seen by some commentators (e.g. Van Lerberghe and De Brouwere, 2001) as an essential ingredient to progress towards our internationally cherished goals and targets for maternal health. Furthermore, the satisfaction of unmet need via good quality family planning services and the availability of safe abortion services are also very important foundations for the reduction of maternal mortality, and to the extent that these are linked with poverty, they form an indirect link between economic hardship and maternal ill-health.

In general, the message is clear in terms of maternal health and its relationship with poverty; Poor women are more likely to die of maternity-related conditions.

However, the caveat here is that improving economic status alone will not bring down maternal mortality rates. Unless health systems are in place that provide good quality facility-based delivery care as well as the availability of skilled outreach workers, the MMR cannot decrease. However, as services are currently configured in low income countries, poverty is a key problem in the access of patchy services, and is thus a major determinant of maternal ill-health.

Appendix 1

TABLES AND FIGURES

Table 1 Maternal mortality ratios and skilled attendance at delivery for selected countries

	Maternal Mortality Rate (per 100,000 births)	Percentage of women with skilled attendance at delivery
Bangladesh	650	9
Nepal	850	10
Pakistan	600	19
India	420	34
Guatemala	300	34
Ghana	1000	42
Bolivia	600	48
Indonesia	400	50
Malawi	167	53
Phillipines	74	60
Nicaragua	300	67
VietNam	120	73
Cambodia	800	87
Brazil	200	88
Uzbekistan		96
Krygyz		97
Kazakstan		98.5

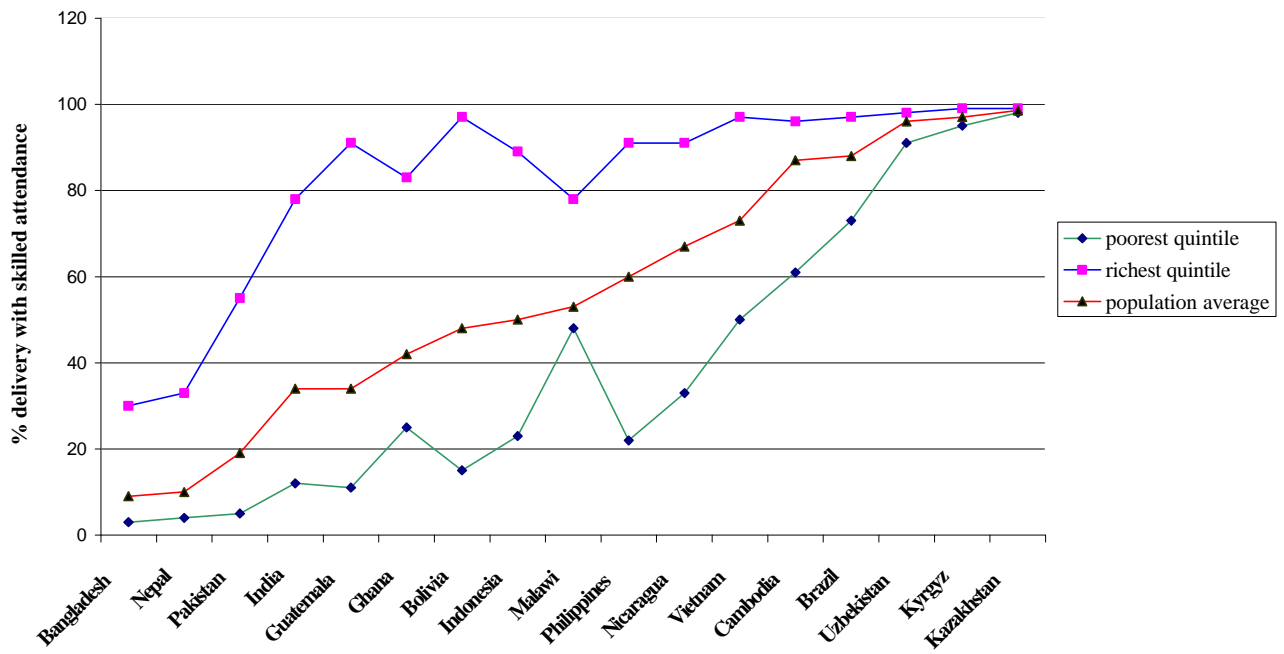
Sources: Kunst and Houweling (2001) for skilled attendance
Population Action International (1995) for MMRs

Table 2 **Inequalities in the use of maternal health services in India in 1992/93**

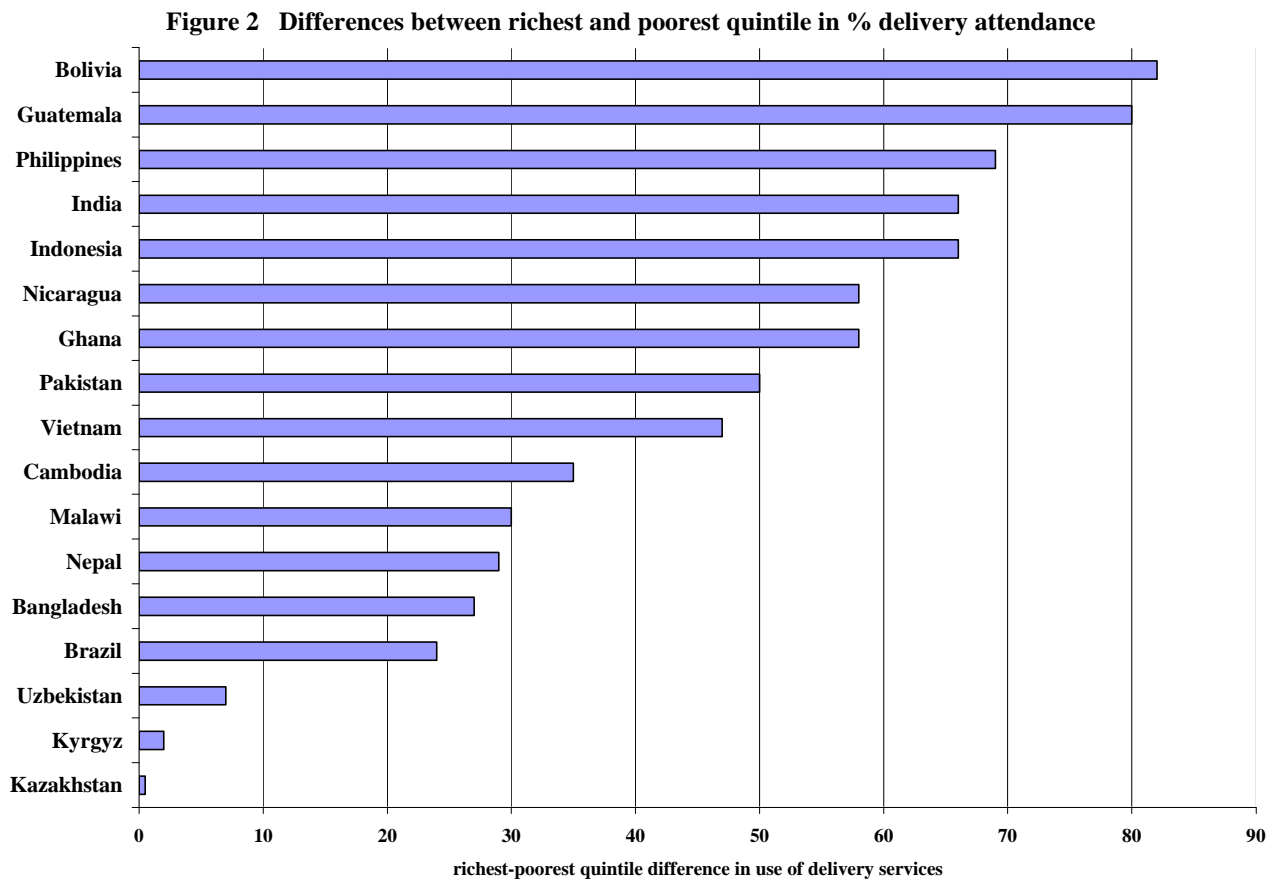
Service indicator	Prevalence (%)		
	Poorest quintile	Richest quintile	Richest-poorest difference
Delivery by medically trained person	11.9	78.7	66.8
Delivery in public or private institution	6.8	71.0	64.2
Antenatal care visits to medically trained person	24.5	88.6	64.1
Two or more antenatal care visits	33.5	90.4	56.9
Complete child immunisation for children 12-23 months	17.1	65.0	47.9

Source Gwatkin et al, Report on India (2000)

Figure 1 Percentage delivery attendance by wealth quintile in selected Asian and other developing countries



Source Kunst and Houweling (2001)



Source Kunst and Houweling (2001)

Appendix 2

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