A global picture of poor-rich differences in the utilisation of delivery care

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Summary

The purpose of this paper is to give a global picture of poor-rich differences in the utilisation of delivery care and other maternal health services. Results published in accessible literature are reviewed and complemented with recent data based on the Demographic and Health Survey (DHS) program.
The results of descriptive and comparative studies are summarised in five points:
In most countries, poor-rich differences in the utilisation of delivery care are huge.
Wealth and delivery care use are associated across the entire wealth hierarchy.
Inequalities in delivery care use are much larger in some countries than in others.
Inequalities tend to be smaller in countries with high female literacy rates.
Large inequalities are observed with respect to most maternal health services.
Results that are relevant to the explanation of inequalities are summarised in four points:
A minor part of poor-rich disparities are due to confounders such as rural vs. urban residence.
Lower use of delivery care by poor mothers is partly due to their lower education.
A wide array of factors mediate the effect of income or education on the use of delivery care.
Poor-rich disparities are strongly sensitive to the national and local context.
The final section of the paper discusses implications for maternal health policies.

Introduction

More than one decade after the Safe Motherhood Initiative was launched (Mahler 1987), maternal mortality still takes a heavy toll in most parts of the developing world (Donnay 2000). There is little doubt that the burden of maternal mortality and morbidity falls disproportionately on poor and low

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educated women. Underutilisation of maternal health services is likely to be a main factor contributing to maternal mortality among socio-economically disadvantaged women.

The purpose of this paper is to give a global picture of poor-rich inequalities in the utilisation of maternal health services. The overview consists of two parts, the first one being descriptive and the second explanatory.

The descriptive part provides basic information on poor-rich disparities in the utilisation of maternal health services and in particular of delivery care. We will address the question whether similar patterns of inequalities are observed throughout the developing world. Without doubt, lower utilisation by poor educated mothers is a common theme to all developing countries, but is this a theme with major variations?

The explanatory part will assess possible explanations of the link between poverty and maternal health services. We will discuss the role of poverty as compared to other forms of socio-economic disadvantage, especially having no or little education. In addition, we will give a brief overview of the factors have been suggested to mediate the effect of socio-economic disadvantage on the utilisation of delivery care.

This overview is based in part on results of studies that are reported on in accessible publications such as international journals. Unfortunately, this evidence appeared to be fragmentary. The evidence comes from a few countries and -within these countries- often from specific regions, cities or villages. Uncertain is to what extent this evidence can be extrapolated to other areas or countries of the developing world. In order to create a global picture, we therefore relied heavily on data available from recent analyses and reports that were made on the basis of data from the international Demographic and Health Survey (DHS) program. All illustrative figures and tables presented in this paper are based on these DHS analyses. For further illustrative materials, the reader is referred to the publications listed at the end of this paper (available upon request from the second author).

The focus of this paper is on the utilisation of delivery care instead of maternal mortality. The main reason for this is that, to our knowledge, there is hardly any empirical evidence on poor-rich differences in maternal mortality and morbidity. A few studies produce valid estimates (e.g. Kestler 1995) but often estimates of poor-rich differences are notably biased (e.g. Jagdish & Cleland 1996). This dearth of information underlines the 'hidden' nature of maternal health problems (Graham & Campbell 1992, Sadana

2000). Another reason to focus on delivery care is that there is a close link between delivery care and maternal mortality. WHO estimates suggest that 88 to 98 percent of all pregnancy-related deaths are avoidable if all women would have access to effective reproductive health care services. Internationally, there is a strong inverse association between national maternal mortality rates and national levels of delivery care utilisation. We found a correlation of minus 0.71 with the utilisation data that are presented in figure 1.

Descriptions of poor-rich disparities

Several studies document large differences in the utilisation of delivery care according women's educational levels (e.g. Elo 1992, Kuate Defo 1997, Raghupathy 1996, Rasheed & Khan 1990). These inequalities have been demonstrated both for Latin America, Sub Saharan Africa, Northern Africa/Near East, and Asia. Unfortunately, there are less publications on inequalities in delivery care according to measures of poverty or household wealth.

However, a world wide overview has been published this year by the World Bank in co-operation with Macrointernational (Gwatkin *et al* 2000). Reports are made for 44 countries that are covered by rounds 2 or 3 of the DHS program. For each country, DHS data are used to describe socio-economic differences in health, nutrition and population (hnp) status and access to hnp services. Women are classified into 5 quintile groups according to household wealth. Wealth is measured by means of an 'asset index' that is based on principal component analyses on more than 40 'asset variables'. These variables include durable consumption goods (e.g. refri-gerator, television, car), housing facilities (e.g. toilet, drinking water) and housing materials (e.g. type of roof, type of floor). The years covered by the DHS data range from 1990 to 1998.

IN MOST COUNTRIES, POOR-RICH DISPARITIES IN THE UTILISATION OF DELIVERY CARE ARE HUGE

Poor-rich disparities in delivery care are presented in figure 1. For each country, the prevalence of delivery attendance by a medically trained person (doctor, nurse or nurse-midwife) is given for the total national DHS sample, for women in the richest quintile and for women in the poorest quintile. It will not come as a surprise that, upon delivery, the richest women were much often attended by a trained person. What is alarming, however, is the

enormous size of the poor-rich gap in many countries. A representative country is Zambia, where the percentage of women receiving medical assistance is about 45 percent for the total sample of women, but about 90 percent for the richest women as compared to only 20 percent for the poorest women.

These poor-rich disparities are much larger than the cross-national differences in overall averages. In terms of delivery care, it is better to be rich in a country with low overall rates than to be poor in a country with high overall rates. It is rare that less than 70 percent of the richest women receive delivery care, as it is rare that more than 70 percent of the poorest receive this care.

Poor-rich disparities are important for national performance rates. This importance can be expressed in terms similar to the population attributable risk (PAR). In the visionary case that all women in a country would enjoy the same degree of delivery attendance as the women in the richest quintile, the overall attendance rate would increase by 30 percent or more in the majority of countries. Even though this estimate is purely hypo-thetical, it underlines the potentially large benefits of policies that explicitly aim at improving delivery attendance among poorer women.

WEALTH AND DELIVERY CARE USE ARE ASSOCIATED ACROSS THE ENTIRE WEALTH HIERARCHY

Whereas figure 1 distinguished only women in the richest and poorest groups, figure 2 also includes women in the 3 intermediate groups. It is evident from this figure that there is a consistent relationship between wealth and delivery care use: each wealth quintile has higher attendance rates than the next-lower quintile. Thus, wealth is related to the use of delivery care at each step of the wealth hierarchy, and not only at the bottom of this hierarchy. Poor-rich disparities pervade the entire society, and not only affect the poorest women as compared to all other women.

In some countries, however, poor-rich disparities in delivery care utilisation do not resemble a linear gradient, but have a less regular pattern emphasising specific groups. In countries with the lowest national prevalence rates (Bangladesh, Nepal, Chad, Niger), there is a gap between the *elite* with relatively high attendance rates and the rest of population, where delivery attendance by trained persons is rare.

Figure 1. Delivery attendance (%) in the poorest quintile, the richest quintile and the total population
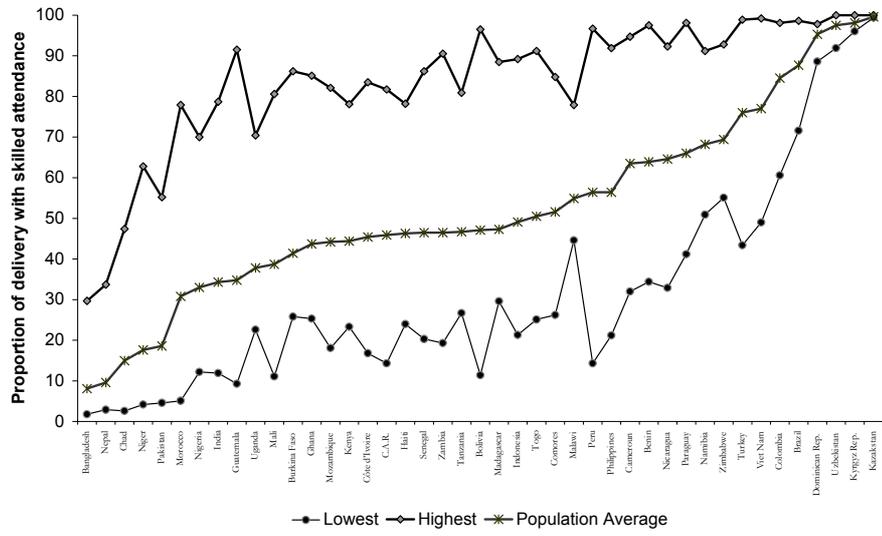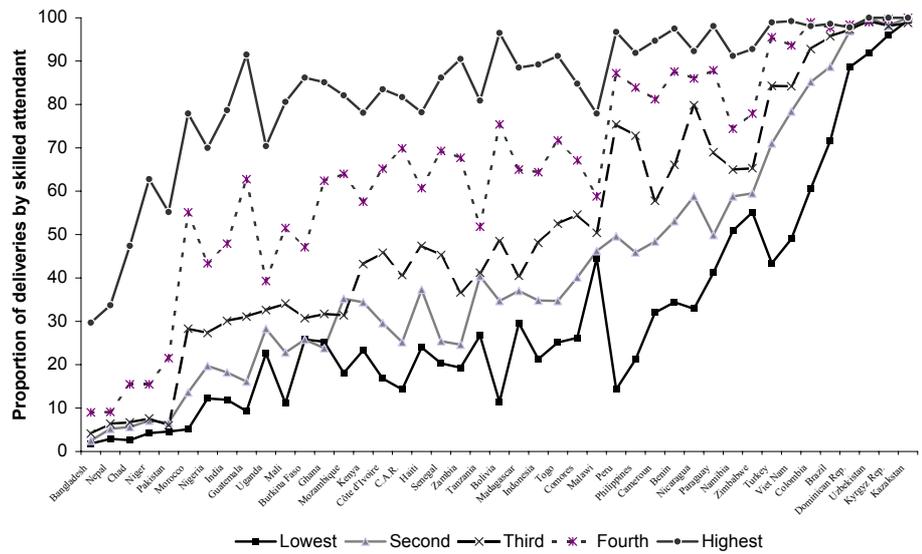

Figure 2. Delivery attendance (%) per wealth quintile

A reverse pattern is observed in some of the countries with high overall rates. In Turkey, Viet Nam, Colombia and Brazil, rates of attendance are fairly high for all women, except for the poorest women.
In these countries, of all women who are not attended at delivery by a trained person, about one half fall into lowest wealth quintile.

These results imply that there are variations between countries with regard to the specific groups that need to be targeted by maternal health services. These variations further suggest that the factors and processes causing poor-rich disparities may strongly vary from country to country. We will return to this theme in the part on poor-rich disparities.

INEQUALITIES IN DELIVERY CARE USE ARE MUCH LARGER IN SOME COUNTRIES THAN IN OTHERS

Even though poor-rich inequalities in delivery care use were found to be huge in most countries, the precise magnitude varies between countries. In figure 3, this magnitude is expressed in a simple way as the absolute difference in utilisation rates between the poorest and richest quintiles. In analyses not reported here, we also measured inequalities in *relative* terms, and we calculated sophisticated indices that take into account *all* wealth quintiles. Even though the position of some individual countries depended on the choice of the inequality index, each index showed the same general picture as the one presented in figure 3.

Obviously, there are large variations in the magnitude of inequalities in delivery care utilisation. In a few countries there are virtually no inequa-lities whereas other countries approach the extreme situation of a 100 percent difference, i.e. nearly all rich women but almost no poor women are attended during delivery.

Some geographical clustering can be observed. The countries with almost maximal inequalities are all in Latin America. The countries with very small inequalities are nearly all central Asian Republics. (It should however, be noted that the data for these countries applied to 1995 to 1997 and that, by the year 2000, inequalities in these countries may have widened substantially). Except for these geographic clusters, there is no clear overall geographic pattern. In both Latin America, Sub Saharan Africa, North Africa/Near East and Asia, there are countries with large inequalities and countries with relatively small inequalities.

This large variability in the magnitude of inequalities illustrate that these inequalities are not a natural, invariable phenomenon. Instead, inequalities

in delivery care are liable to change, also through intervention. This message holds especially for countries with the largest inequalities. For these countries, figure 3 shows that inequalities can be smaller than they are now, and that suggestions on how to achieve a reduction might be obtained by a closer look into the situation of countries with smaller inequalities.

Figure 3. Differences between richest and poorest quintile in % delivery attendance
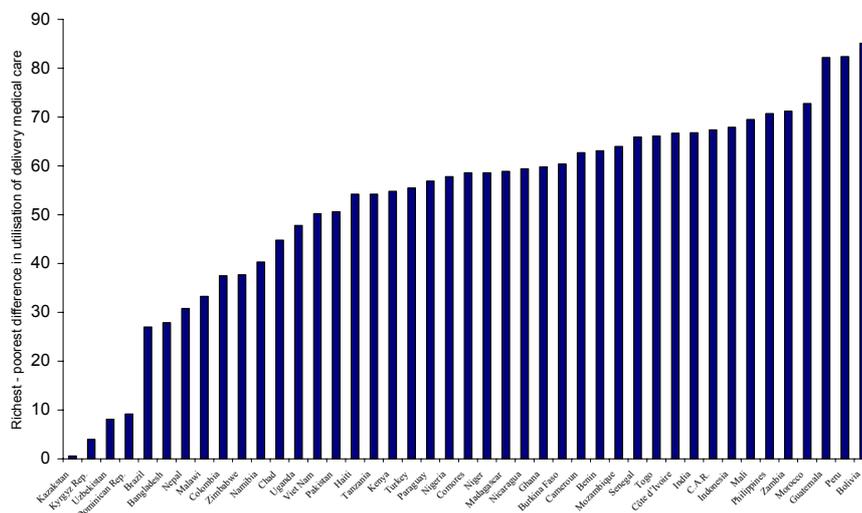
INEQUALITIES TEND TO BE SMALLER IN COUNTRIES WITH HIGH FEMALE LITERACY RATES

The large variations observed in the part on inequalities in delivery care raise the question what characterises countries with larger or smaller poor-rich differences in delivery care. We have examined three national characteristics that might be relevant to inequalities in delivery care: gross domestic product (GDP) per capita, public health expenditure (as % of GDP) and the female literacy rate. Correlations are shown in the table 1.

The strongest associations are observed with female literacy rates. For women in both the highest quintile and the lowest quintile, delivery attendance rates are generally higher in countries where more women are literate (correlations are 0.66 and 0.69). This suggest that both rich and poor women benefit from an increase in national literacy rates. However, closer inspection of the data showed that the 'timing' of the effect differs.

Table 1. Correlations between delivery attendance rates and national characteristics.

Factor	Pearson correlation with delivery attendance			
	National attendance rate	Rate of richest quintile	Rate of poorest quintile	Poor-rich difference
GDP per capita (in PPP $, 1995)	0.51 **	0.44 **	0.40 **	-0.15
Adult literacy rate (women, 1995)	0.78 **	0.66 **	0.69 **	-0.33 *
Public health expenditure (% of GDP, 1995)	-0.05	-0.05	0.01	-0.06

* : p<0.05, ** : p<0.01
SOURCE: *own calculations based on delivery attendance data given in Gwatkin* et al. *(2000) and data from the Human Development Reports of 1998 and 2000.*

Richest women benefit most from an increase in literacy rates until national levels of about 40 percent, whereas the poorest women start to benefit from increases in national literacy rates beyond about 60 percent. Because at higher levels poorest women benefit most, poor-rich differences in delivery use are generally smaller in countries higher literacy rates (correlation is -0.33).

A similar pattern of associations, albeit less pronounced, was observed with GDP per capita. Although no causality can be attributed to these statistical associations, they underline the idea that both increased female education and economic development can promote a more generalised and more equitable utilisation of obstetric care.

LARGE INEQUALITIES ARE OBSERVED WITH RESPECT TO MOST MATER-NAL HEALTH SERVICES

Several studies documented that poor women are at a disadvantage not only during childbirth but also in the periods before and afterwards. In-equalities in different maternal and child health services are illustrated below with more data from India. (This country is highlighted here because about one half of all maternal deaths world wide occur in India).

These data do not only illustrate the generalised nature of poor-rich inequalities in service use, but they also show that inequalities are particularly large for antenatal care and delivery care. Inequalities in contraceptive use and immunisation coverage are substantial too, but less dramatic. Also in most other countries covered by the DHS, poor-rich differences were largest for antenatal and delivery care.

Table 2. Inequalities in the utilisation of maternal health services in India in 1992/93

Service indicator	Prevalence (%)					Richest/ poorest difference
	poorest	second	third	fourth	richest	
Delivery						
- by medically trained person	11.9	18.2	30.1	47.9	78.7	66.8
- in public or private facility	6.8	11.9	19.6	36.1	71.0	64.2
Antenatal care visits						
- to medically trained person	24.5	33.5	46.4	65.3	88.6	64.1
- two or more consultations	33.5	42.7	56.1	71.2	90.4	56.9
Use of modern contraceptives	24.9	27.5	36.1	42.0	50.6	25.7
Complete immunisation coverage of children 12-23 months	17.1	21.7	34.7	48.2	65.0	47.9

SOURCE: Gwatkin *et al.* (2000). Report on India.

These particularly large inequalities are probably due to the special difficulties that poor women may experience in utilising health services when they are pregnant or give birth to a child. Several barriers may make these antenatal and obstetric services inaccessible, unaffordable or unac-ceptable to women with few economic resources. The next part will discuss in more detail the causes of poor-rich disparities in the use of delivery care.

## Towards explanations of poor-rich disparities

Whereas there is no doubt that poor women utilise antenatal and obstetric services much less than wealthier women, the questions remains *why* they use these services less often. Without doubt, a whole array of factors is involved, ranging from financial barriers to issues of women's status and autonomy. Ideally, this section would come up with an exhaustive overview of these factors, together with a discussion of the ways in which, and extent to which, each of these factors contribute to inequalities in health service use. This knowledge would greatly facilitate the identification of policy measures that can be most effective in tackling poor-rich disparities in service use and maternal mortality.

Unfortunately, the empirical evidence as it is published in the literature

is fragmentary and poorly comparable between countries. Few or no studies have been designed with the explicit purpose to explain inequalities in maternal mortality and morbidity, or inequalities in the utilisation of maternal health services. Pieces of evidence can however be obtained from empirical studies designed for other purposes, as well from insights that were obtained using qualitative methods. This evidence is briefly sum-marised in this chapter.

We will follow the conceptual scheme presented at the next page (c.f. Kuate Defo 1997). A few words may be needed to clarify this scheme, and especially the concept of socio-economic status (SES). This concept recognises that, within each society, material and other resources are unequally distributed. This inequality can be portrayed as a social ladder or social hierarchy. People attain different positions in the social hierarchy depending on their educational level, income level and other scarce resources. Since these socio-economic factors together determine a person's SES, they should be considered as different indicators of the same basic concept. These indicators are complementary as they cover different di-mensions of SES. Therefore, it is advisable to look at the specific pattern of inequalities observed for each of these indicators separately (Kunst & Mackenbach 1994).

Figure 4. A simple conceptual framework for the explanation of socio-economic inequalities in health service utilisation
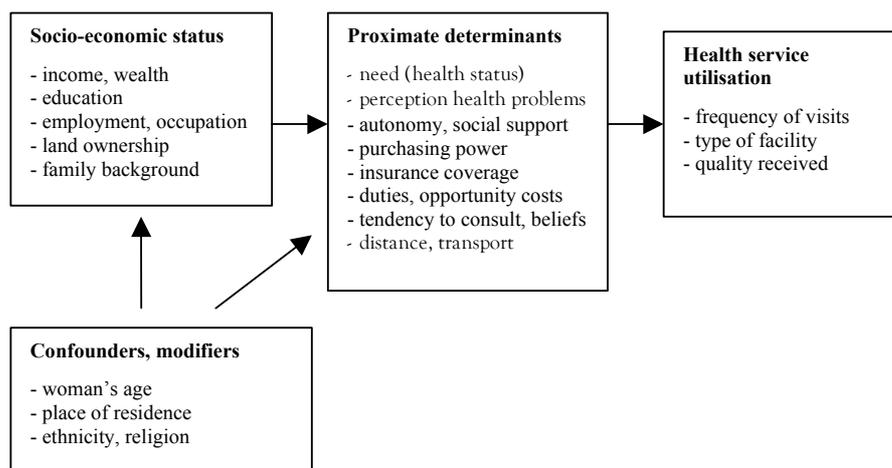
A MINOR PART OF POOR-RICH DISPARITIES ARE DUE TO CONFOUNDERS SUCH AS RURAL VS. URBAN RESIDENCE

Following the conceptual scheme, the first question to be addressed is whether or not the lower utilisation of delivery care by poor women is due to factors that can be conceived as 'confounders' of the association between socio-economic status and health care utilisation. Potentially important factors are those that, independently from SES, have substantial effects on utilisation rates. For example, in a study from Turkey (Celik & Hotchkiss 2000), utilisation rates were found to differ substantially according to geographic factors (region, rural vs. urban residence), ethnicity (Kurdish vs. Turkish) and the age of the woman.

The evidence from the literature indicates that these potential confounders explain only a minor part of socio-economic inequalities in attendance rates. In each study that is reviewed, socio-economic inequalities persist after control is made for factors such as place of residence, women's age and ethnicity (e.g. Celik & Hotchkiss 2000, Okafor 1991). For example, in a study on Thailand (Raghupathy 1996), large differences between income groups in delivery assistance were observed after controlling for, among other factors, women's age, childhood resi-dence, religion, and rural vs. urban residence.

The role of urbanisation is also evaluated in the table 3, which presents estimates of poor-rich differences in the utilisation of delivery care within the urban areas of 7 countries. In each country, a comparison is made between the wealthier and poorer half of the urban population. If urban vs. rural residence would be a major confounding factor, one would expect to observed much smaller differences *within* urban populations alone. However, substantial differences are observed for each country. In addition, when taking into account that broad (instead of extreme) groups are compared, these differences are not much smaller than those demonstrated in figure 3 for these countries in their entirety.

These results indicate that poor-rich differences in the utilisation of maternal health services do not simply reflect the effect of geographical, ethnic or other confounding factors. There is little doubt that socio-economic disadvantage itself, either at the level of individuals or at the household level, directly affects women's utilisation of maternal health care services.

Table 3. Inequalities in utilisation of delivery care within urban areas of 6 countries

Country	Wealthier half	Poorer half	Difference
Bolivia	97.9	73.3	24.6
Côte d'Ivoire	86.1	70.7	15.4
Morocco	75.6	50.9	24.7
India	89.5	63.0	26.5
Indonesia	94.0	68.8	25.2
Kyrgyz Republic	98.2	98.1	0.1

SOURCE: Own calculations based on data presented by Gwatkin *et al.* (2000).

LOWER USE OF DELIVERY CARE BY POOR MOTHERS IS PARTLY DUE TO THEIR LOWER EDUCATION

The utilisation of delivery care varies according to a wide array of socio-economic indicators. The socio-economic indicator documented most extensively is the women's educational level (Caldwell *et al.* 1983, Elo 1992). Associations have also been shown with, among others, women's occupation (McCaw-Binns *et al.* 1995, Okafor 1991) and the socio-econo-mic status of their parents (Bender & McCann 2000, Elo 1992). Given these associations, it may be expected that several socio-economic factors have contributed to the lower utilisation rates of women living in poverty.

There is some empirical evidence to support this expectation. In multivariate studies that include both income and education, women's education stands out as the most important determinant of the use of maternal health services. Evidence on this comes from, among other countries, Turkey (Celik & Hotchkiss 2000), Thailand (Raghupathy 1996) and Nigeria (Okafor 1991).

Further evidence is presented in table 4 for four other countries. For each country, inequalities according to wealth are compared to the inequalities according to the educational level of women. The latter inequalities are quantified with the Slope Index of Inequality, an index that yields values that are roughly equivalent to estimate of the rich/poor differences. In each of the four countries for which we made these estimates, inequalities according to educational level appeared to be larger than those according to the wealth index.

Despite the importance of other socio-economic factors, the direct effect of income and wealth on (the proximate determinants of) health care utilisation should not be underscored. In most multivariate analyses, an independent effect of wealth or poverty measures remained after control was

made for education and other socio-economic factors (Kuate Defo 1997, Rasheed & Khan 1990). This indicates that poor-rich differences in the use of delivery care also reflect financial and related difficulties that poor women may face when needing maternal health services.

Table 4. Inequalities in the utilisation of delivery care according to wealth and educational level respectively

Country	Magnitude of difference in utilisation	
	Wealth: highest vs. lowest quintile	Education: slope index of inequality
Dominican Republic	8.9	19.0
Uganda	47.8	66.4
Ghana	59.8	68.0
Indonesia	67.9	84.0

SOURCE: Gwatkin *et al.* (2000) for wealth, and own calculations based on DHS files for education.

A WIDE ARRAY OF FACTORS MEDIATE THE EFFECT OF INCOME OR EDUCATION ON THE USE OF DELIVERY CARE

The main challenge of explanatory research is to identify the causal pathways by means of which the socio-economic status of women affects their utilisation of health services. Without doubt, many 'proximate determinants' are involved and they may combine and interact in complex ways. Different determinants have been emphasised by different authors.

Some authors have stressed the direct consequences of financial and related constraints. Among the factors mentioned are lack of adequate transport, no or insufficient health insurance, the high opportunity costs of medical consultations, and reduced opportunities to cope with the emergencies of pregnancy or child delivery. For example, in rural Kenya, travel time and insurance coverage are key constraints determining who deliver at home with traditional birth attendants (Hodgkin 1996). Similar findings were reported on Bangladesh (Nahar & Costello 1998).

Other authors have stressed factors more related to women's education. The positive effect of education on health care utilisation has been attributed to increased autonomy and decision making power, higher ability to acquire and process new information, and changing attitudes towards health problems and health services. For example, the often observed conflict between local cultures and western medicine (Asowa-Omorodion 1997,

Sundari 1992) may be more easily resolved by women with higher levels of education.

To our knowledge, no attempt has been made to empirically assess the extent to which different proximate determinants contribute to the lower level of health care utilisation of poor women. If these attempts would have been made, the results would be strongly dependent on the specific national and local context. Perhaps most fruitful in future research is to recognise the complex interplay of many factors, and to perform observational or experimental studies that focus on a few factors that are amenable to modification through intervention.

POOR-RICH DISPARITIES ARE STRONGLY SENSITIVE TO THE WIDER NATIONAL AND LOCAL CONTEXT

In addition to 'proximate determinants', explanatory research may also focus on the 'contextual determinants' of poor-rich inequalities, i.e. features of the national or local context that may influence the pattern and magnitude of inequalities. This approach may be especially suited for evaluating the role of alternative socio-economic, health care and other policies.

In the parts on wealth and delivery care and inequalities in delivery care, important variations between countries were observed with regard to poor-rich disparities in the utilisation of delivery care. These variations provide an opportunity to explore the role of contextual factors. In the part on inequalities ...female literacy rates, it was observed that female literacy was an important correlate, thus underlining the key importance of women's education for reducing socio-economic inequalities with regard to maternal health services.

In that comparative analysis, the magnitude of inequalities was unrelated to the amount of public health expenditure, when measured as a percentage of GDP. An alternative (and probably far more sensitive) way to evaluate the potential effect of health care systems and policies, is to evaluate the effect of changes over time in the organisation and finance of health care systems. Some trend studies are now underway. For example, one study deals with changes in Tanzania during the early 1990's, when new structures of health care provision were gradually introduced by moving away from the old socialist system. As the data in table 5 illustrate, there was an increase during that period in inequalities in the use of maternal health services. This finding illustrates that changes in health care systems may affect different

socio-economic groups differently, thus either widening or narrowing existing gaps in health and health care.

Table 5. Educational differences in the utilisation of antenatal and delivery care: trends in Tanzania

Service indicator	Relative Index of Inequality	
	1991	1996
Delivery in public or private facility	5.56	8.33
Delivery with trained attendance	6.25	7.14
Two or more antenatal care visits	3.45	5.56

SOURCE: Zuure, Kunst & Van Doorslaer (manuscript)

Implications

Stimulated by the Safe Motherhood Initiative, many efforts were made over the last decade to improve antenatal, obstetric and other reproductive health services (Donnay 2000). However, the persistence of high levels of maternal mortality stresses the need to explore new strategies. What can future efforts in this field learn from the currently available evidence on poor-rich disparities in the use of maternal health services? Below, we will formulate some general implications.

First of all, however, we should stress that we cannot formulate concrete advice on specific policies. This advice is usually strongly depen-dent on the national and local context, which is at odds with the global picture that we aimed to draw in this paper. In addition, implications for specific policies have to come from operational research or intervention studies that focus explicitly on the poor, but these studies are yet rare and not evaluated in this paper.

EQUITY IN MATERNAL HEALTH AND HEALTH CARE SHOULD BE A MAIN TARGET

Few would dispute that the huge inequalities that are observed for so many countries are unfair and unnecessary. Put briefly, these inequalities repre-sent 'inequities' (Whitehead 1990). Even though a complete elimination of inequalities in health care use may not be a realistic aim for the next years to come, these inequalities can at least be reduced to an important extent.

Therefore, it is highly important that maternal health policies and programs not only focus on poor women in implicit ways, but that they explicitly formulate a reduction of inequalities as one of their key targets.

THE EFFECTIVENESS OF INTERVENTIONS ALSO DEPENDS ON THEIR FOCUS ON THE SITUATION OF THE POOR WOMEN

An interest in poor-rich disparities may not only be driven by a concern for equity and fairness, but may also be motivated by the wish to increase the effectiveness of interventions in terms of population averages. Because problems with maternal mortality and the utilisation of health services are often concentrated among the poorest groups, programs that aims to address these problems may have limited effects if they do not respond to the particular problems and needs of the poorest women. For example, when alternative maternal health care systems are considered (Koblinsky *et al.* 2000), explicit attention should be given to the question which system can be secure that health services are accessible, affordable and acceptable to poor and low educated mothers.

THE BROADER ECONOMIC, SOCIAL AND CULTURAL ENVIRONMENT SHOULD BE ADDRESSED WHERE POSSIBLE

Even though the provision of maternal health service needs to be improved in many respects, better service provision is not the exclusive means to increase utilisation rates and to reduce maternal mortality and morbidity. Several authors have stressed how important it is that women are able to take control over their own lives so that they can better care for their children and themselves, and seek medical care when needed. The huge inequalities according to both income and education underline the impor-tance of the broader economic, social and cultural environment. Where possible, policies should aim to identify and modify economic, social and cultural factors that affect poor and low educated women most.

MONITORING SYSTEMS SHOULD DISTINGUISH SOCIO-ECONOMIC GROUPS

Monitoring progress towards health targets is important for both advocacy, strategic decisions and evaluation. The large inequalities observed in this paper stress that future developments should be monitored not only for the

population as a whole, but also for subgroups defined in terms of education, wealth or other socio-economic terms. Only in this way we can assess whether poor women will be benefiting most from future successes in the battle against maternal mortality.

Acknowledgements

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