# Unwanted fertility among the poor: an inequity?

Duff Gillespie,[a] Saifuddin Ahmed,[a] Amy Tsui[a] & Scott Radloff[b]

**Objective** To determine if higher fertility and lower contraceptive use among the poorer segments of society should be considered an inequality, reflecting a higher desire for large families among the poor, or an inequity, a product of the poor being prevented from achieving their desired fertility to the same degree as wealthier segments of society.

**Methods** Using the most recent Demographic and Health Surveys from 41 countries, we analysed the differences in fertility in light of modern contraceptive use, unwanted fertility (defined as actual fertility in excess of desired fertility) and the availability of family planning services found among poorer and wealthier segments of society. The asset index in each survey was used to construct wealth quintiles and the concentration index (CI) of income inequality was found in health variables.

**Findings** The relationship between the CI found in the total fertility rate and the use of contraceptives was linear, R-square of 0.289. Unwanted births in the poorest quintile were more than twice that found in the wealthiest quintile, respectively 1.2 and 0.5, although there was wide variation among the 41 countries. The CI in our measure of family planning availability (radio messages, knowledge of services and contact with field workers) was largely positively associated with the CI in modern contraceptive prevalence, respectively R-squares of 0.392, 0.692 and 0.526.

**Conclusion** In many countries the higher fertility and lower contraceptive use found among poorer relative to wealthier populations should be considered an inequity.

Bulletin of the World Health Organization 2007;85:100-107.

*Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español.*   الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

## Introduction

In 2000, the United Nations Millennium Declaration created the Millennium Development Goals (MDGs).[1,2] These goals established the elimination of poverty and the attainment of equity as a core organizing theme for development activities, including health.[3–5] A large literature on inequities in health exists, although this knowledge has not consistently translated into programmes designed to fill inequity gaps.[6,7] In contrast, there has been very little research on possible inequities in fertility, the number of children people have. We think an important reason why fertility inequities have not received much attention is that they do not easily fit into the concept of inequity.

Although there is not a consensual definition of inequity, most economists and ethicists agree with Whitehead in distinguishing between a difference that has no moral implications, an inequality, and a difference that does have moral implications and is considered unjust, an inequity.[8,9] The fact that Chinese-Americans have black hair and Scandinavian-Americans are quite often blond is an inequality with no moral implications. Yet the fact that poor children's mortality rate from preventable diseases is much higher than that found among children from wealthier families raises many moral issues and is considered an inequity.[10] A difference labelled an inequity is likely to have a societal response quite different from a difference designated as an inequality. Indeed, an inequality, in the absence of inequity, may not provoke any societal response.

Inequities exist between different groups: gender, ethnic, regional, religious, social and racial groups. However, most attention is given to inequities between the poor and wealthy or, more accurately stated for many developing countries, between the poor and the less poor, since so few persons in these countries would be considered wealthy in industrialized nations. In this paper, we examine whether unwanted fertility among the poorer strata of societies compared with the wealthier strata is an inequality or an inequity. In order for a condition to be considered an inequity, we believe it must have four characteristics:

- It must be disproportionately present in a disadvantaged population relative to better-off population segments.
- It must be amenable to effective interventions.
- It must be undesirable.
- Interventions to relieve or lessen this condition are less available to the disadvantaged than to wealthier populations.

The above four properties of inequity are much discussed in the health inequality-inequity literature, but have received scant attention in the family planning literature.[8,9,11,12] We use these characteristics as the analytical framework for determining if the differences in unwanted fertility between the poor and less poor segments of society constitute an inequity produced by an injustice, or simply represent a difference between fertility patterns reflecting one group's desire for larger families and another group's preference for smaller families.

## Methods

Our analysis is based on Demographic and Health Surveys (DHS) data from 41 developing countries collected by Measure DHS.[13] All of these national household sample surveys collected extensive data from women between the ages of 15 and 49 years concerning their reproductive behaviour and included an asset index for categorizing respondents' relative socioeconomic status.[14] The asset index is the weighted sum of household assets, with weights derived from a principal components analysis. Household assets include housing characteristics (e.g. number of rooms, type of floor, access to water and type of toilet) and ownership of consumer durables (e.g. radio, television, motor vehicle and bicycle). Using the asset index, wealth quintiles were calculated for the 41 developing countries with available DHS data as of 2003. Most analyses group the population into wealth quintiles, with the first being the poorest and the fifth being the least poor.

We also use the concentration index (CI), an analytical tool used extensively by The World Bank, to quantify the extent to which an income-related difference, or inequality, is present in a health variable.[15] A CI of zero means there is no inequality. A negative or positive CI indicates the concentration of income inequality in a particular variable. The further the CI value is from zero, the stronger the income-related inequality. A negative CI means that a bad condition, such as measles, is disproportionately found among the poor. Contrastingly, a positive CI is associated with something good, like immunization coverage, being less in poorer strata of society and greater in the wealthier strata.

Three common demographic measures are used in this study: the total fertility rate (TFR), the unwanted total fertility rate (UTFR), and the modern contraceptive prevalence rate (MCPR). TFR is the total number of births the average woman would have at the end of her childbearing period if she passed through this period bearing children at observed rates of age-specific fertility. The DHS calculates wanted fertility rates by comparing the number of living children at the conception of each child in the past three years with the ideal number of children reported by female respondents. If the number of children living at the time of conception is less than the ideal number, the birth is considered wanted. If the number living is equal to or greater than the ideal number, the birth is considered unwanted. The difference between the wanted fertility and actual total fertility is the unwanted fertility rate.[16]

MCPR is calculated based on the respondents' reported use of modern contraceptive methods at the time of the interview. Modern methods include male and female sterilization, oral contraceptives, IUDs, injectables, implants, male and female condoms, foams and jellies. Not included in MCPR are rhythm, withdrawal and periodic abstinence. We choose to use MCPR since this most directly reflects the service interventions sponsored by organized family planning programs.

Our statistical approach involves calculation of the concentration index for total and unwanted fertility and modern contraceptive use measures for each of the 41 countries with available survey data (Table 1). The values are plotted against each other and simple regression lines are fitted to display their relationships graphically. We also assess inequitable coverage of three contraceptive service delivery interventions — radio exposure to family planning messages, knowledge of a family planning source, and contact with a family planning fieldworker — using the concentration index. The relationship between the concentration indices for each of these measures with that for MCPR are also displayed graphically with regression lines to capture their linear or curvilinear associations.

## Results

In this section we will determine if the difference in unwanted fertility between the poor and wealthy is an inequity, by seeing if there is evidence to support the four required characteristics.

### Disproportionately present in disadvantaged population

It is axiomatic that the poorer a group, the more disadvantaged they are relative to those better off. What may be surprising is the pervasiveness of their handicapped situation. Essentially, the poor find themselves positioned unfavourably relative to those better off in every developmental category.[4] In the 41 countries surveyed, the poorest quintile had a TFR of 6, almost twice as high as the TFR of 3.1 found in the wealthiest quintile. The first condition for an inequity is thus satisfied, as TFR is much higher among the poor than the less poor.

This inequality in TFR, *prima facie*, can not be considered an inequity. The poor may have more children than the less poor because they want more children than their wealthier counterparts. If the poor want and have more children than those wealthier, it can hardly be considered an inequity even if larger families may exacerbate their disadvantaged position in society.

### Effective intervention

To be an inequity, an undesirable condition must be amenable to an intervention that can eradicate or ameliorate it. When an effective intervention is more commonly practiced by the better off social strata than by the less well off, an inequity most likely exists. However, if there is no effective intervention, there can be no inequity. The fatal hereditary disease Tay-Sachs is found almost exclusively among Ashkenazi Jews and has no cure. Since Ashkenazi Jews are not being deprived of an effective treatment, there is no inequity.

Humans can and do control their fertility. It is well established that family planning is the main reason for the dramatic drop in the world's fertility during the second half of the past century. Other important variables that directly impact reproduction are marriage patterns, breastfeeding and abortion.[17] The global decline in fertility has been remarkable: in the early 1950s the world's TFR was 5, while today it is 2.7. Looking only at the less-developed world, the comparable TFRs are 6.2 and 2.9.[18]

The strong relationship between family planning and TFR in the 41 countries study is shown in the left panel of Fig. 1. The explained variation (R-square value) for the fitted linear relationship is 0.593. The correlation of $-0.77$ (not shown) is for all 41 countries in this study. Higher levels of contraceptive use are associated with lower TFRs. Specifically, for every 13-point rise in modern contraceptive prevalence, the total fertility rate declines by 1 birth.

The right panel of Fig. 1 shows the relationship between inequalities in TFR and modern CPR. The fit for these two inequalities is less tight (R-square of 0.289) than for the actual values, seen in the left panel. However, the

Fig. 1. **Total fertility rate (TFR) and modern contraceptive prevalence rate (left), and concentration indices (CI) for total fertility rate and modern contraceptive prevalence (right) for 41 developing countries identified in Table 1**
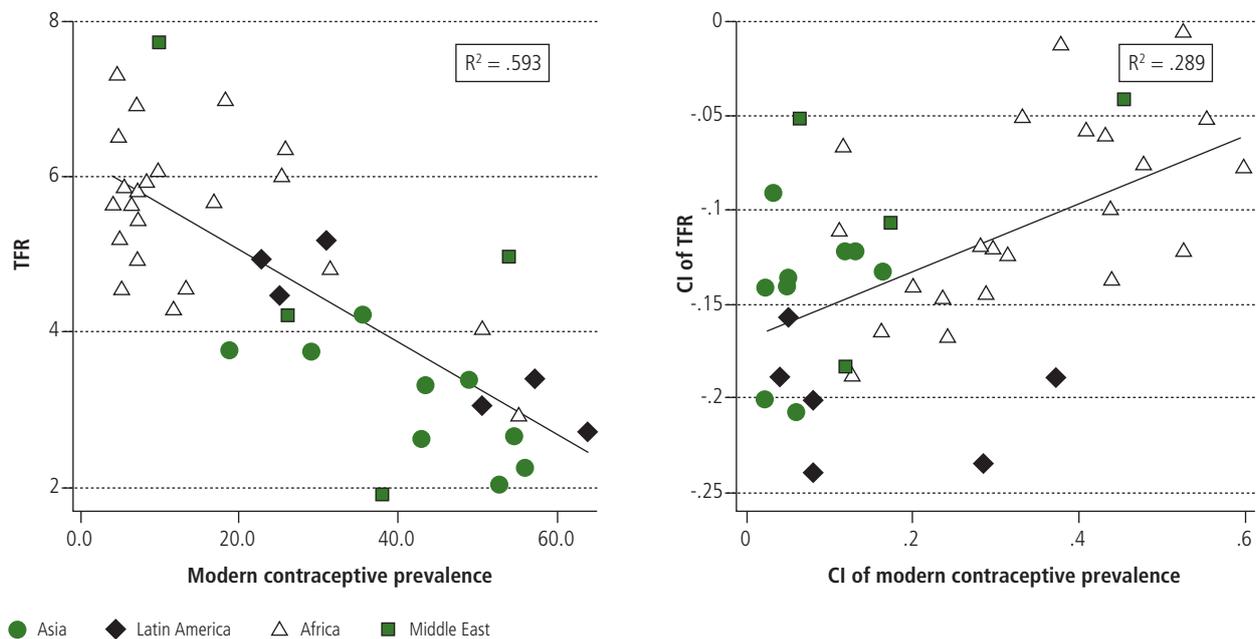


relationship is clearly linear. A one-unit change in unequal access to modern contraception results in a 0.179 increase ($P < 0.001$, 95% CI = 0.88, 0.279) in TFR inequality.

Family planning thus is an effective way for individuals and groups to lower their fertility if they so desire; and reducing inequality in access to modern contraception will also reduce the inequality in fertility. The second condition for an inequity is then satisfied — there is an intervention, family planning, that can be used to regulate fertility.

## Undesirable

No one wants to die or see a loved one die, and illness is equally unwelcome. If one group has higher mortality and morbidity rates than other groups, one can assume the disadvantaged group would want access to interventions that will reduce their disproportionate number of deaths and illnesses. Persons calling for universal coverage of effective health interventions and who expose the inequities of present coverage do not have to convince others about the undesirability of sickness and death.[19,20] But pregnancy is not an illness, and a birth is the beginning of life, not its end.

Fertility, and ways to control it, has many more nuances than death and ways to avoid death. Death is almost always viewed as undesirable. Learning one

is pregnant is often a happy discovery, but it is also frequently received with dismay, as evidenced by the 46 million abortions annually.[21] Over half of the world's couples are practicing family planning to avoid pregnancy.[22] Whether a pregnancy or baby is received with joy, ambivalence or despair depends on such things as gender, birth order, age and marital status of the parents and their socioeconomic situation. The extensive use of prenatal sex selection to abort female fetuses is one of the more horrific manifestations of gender bias.[23] Although high fertility rates do not carry the undesirable absoluteness of high mortality rates, poorly spaced fertility carries significant health risks for both mothers and children, and unwanted fertility leads millions of women to seek unsafe abortions, especially in the developing world.[24,25]

It is possible to estimate how much observed fertility is unwanted and if this varies from one socioeconomic stratum to the next. Table 1 presents the differentials in total and unwanted fertility by wealth quintiles and the concentration index for each of the 41 developing countries. Three countries (Bolivia, Haiti and Yemen) show national unwanted fertility levels of 1.8–2.0 births per woman. It is striking that no quintile in any of the 41 developing countries registers an average unwanted fertil-

ity rate of 0; the lowest is 0.2 births in Kazakhstan and Niger. Significant excess fertility levels of 2 births or more are found among the poorest quintiles in Bolivia, Colombia, Haiti, Nepal, Peru and the Philippines. A high ratio is observable between the (unweighted) average number of unwanted births in the poorest two quintiles of 1.2 and 1.1 and the wealthiest two with 0.5 and 0.8 respectively. The average concentration index of −0.133 reflects the substantial disparity in reproduction levels beyond what women want.

Fig. 2 displays the relationship between inequality in modern contraceptive prevalence and inequality in unwanted fertility. While higher levels of MCPR inequality are positively correlated with higher inequality in unwanted TFR, it is the desirable reduction in joint inequality that is the noteworthy finding. The left side of Fig. 2 maps countries where MCPR and unwanted fertility inequality are particularly low. Some 21 countries have CI values for MCPR 0.2 or lower and CI values for unwanted fertility 0 or lower. (The closer to 0 or the more negative the CI, the less inequality in unwanted fertility.) Another quarter of the countries experience moderate inequality in MCPR (0.2 to 0.4) and marginal unwanted fertility, while the balance have significant MCPR in-

Table 1. **Total unwanted fertility rates by wealth quintiles and concentration index (CI) for 41 developing countries**

| Country, survey year | Wealth quintile 1 | Wealth quintile 2 | Wealth quintile 3 | Wealth quintile 4 | Wealth quintile 5 | Total Unwanted Fertility | CI | 95% confidence interval | |
|---|---|---|---|---|---|---|---|---|---|
| **Asia** | | | | | | | | | |
| Bangladesh, 2000 | 1.5 | 1.4 | 1.0 | 0.9 | 0.6 | 1.1 | −0.163 | −0.242 | −0.084 |
| Cambodia, 2000 | 1.2 | 1.1 | 0.8 | 0.8 | 0.2 | 0.8 | −0.224 | −0.424 | −0.024 |
| India, 1999 | 1.0 | 0.9 | 0.7 | 0.6 | 0.4 | 0.7 | −0.182 | −0.278 | −0.086 |
| Indonesia, 1997 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | −0.041 | −0.098 | 0.016 |
| Kazakhstan, 1999 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | −0.227 | −0.307 | −0.146 |
| Kyrgyzstan, 1997 | 0.4 | 0.2 | 0.4 | 0.2 | 0.2 | 0.3 | −0.138 | −0.239 | −0.037 |
| Nepal, 2001 | 2.2 | 2.0 | 1.8 | 1.4 | 0.7 | 1.6 | −0.174 | −0.307 | −0.041 |
| Philippines, 1998 | 2.2 | 1.6 | 0.9 | 0.5 | 0.3 | 1.0 | −0.348 | −0.475 | −0.221 |
| Vietnam, 1997 | 0.8 | 0.5 | 0.5 | 0.4 | 0.2 | 0.5 | −0.239 | −0.383 | −0.096 |
| **Latin America** | | | | | | | | | |
| Bolivia, 1998 | 3.8 | 2.8 | 1.9 | 0.9 | 0.3 | 1.8 | −0.372 | −0.583 | −0.160 |
| Colombia, 2000 | 2.0 | 1.1 | 0.7 | 0.4 | 0.3 | 0.8 | −0.347 | −0.462 | −0.232 |
| Guatemala, 1998 | 1.0 | 1.4 | 1.1 | 1.0 | 0.4 | 1.0 | −0.144 | −0.312 | 0.024 |
| Haiti, 2000 | 2.9 | 2.7 | 2.1 | 1.7 | 0.9 | 1.9 | −0.200 | −0.330 | −0.071 |
| Nicaragua, 1997 | 1.9 | 1.4 | 1.0 | 0.6 | 0.4 | 1.0 | −0.284 | −0.406 | −0.162 |
| Peru, 2000 | 2.4 | 1.6 | 0.9 | 0.5 | 0.3 | 1.0 | −0.370 | −0.525 | −0.214 |
| **Africa** | | | | | | | | | |
| Benin, 2001 | 1.3 | 1.1 | 1.0 | 1.1 | 0.7 | 1.0 | −0.092 | −0.189 | 0.005 |
| Burkina Faso, 1998 | 0.6 | 0.9 | 0.8 | 0.8 | 0.7 | 0.8 | 0.003 | −0.075 | 0.081 |
| Cameroon, 1998 | 0.4 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.059 | −0.033 | 0.150 |
| Ethiopia, 2000 | 1.0 | 1.0 | 0.6 | 0.9 | 0.7 | 0.9 | −0.061 | −0.116 | −0.005 |
| Gabon, 2000 | 1.0 | 0.9 | 0.8 | 0.8 | 0.5 | 0.8 | −0.118 | −0.217 | −0.020 |
| Ghana, 1998 | 1.1 | 1.1 | 1.1 | 0.8 | 0.3 | 0.9 | −0.181 | −0.384 | 0.021 |
| Guinea, 1999 | 0.3 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.116 | −0.007 | 0.240 |
| Kenya, 1998 | 1.9 | 1.6 | 1.3 | 1.1 | 0.5 | 1.2 | −0.220 | −0.379 | −0.060 |
| Madagascar, 1997 | 0.9 | 0.7 | 0.9 | 0.8 | 0.5 | 0.7 | −0.095 | −0.212 | 0.023 |
| Malawi, 2000 | 1.1 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | −0.008 | −0.037 | 0.021 |
| Mali, 2000 | 0.7 | 0.7 | 0.6 | 0.7 | 0.7 | 0.7 | −0.002 | −0.028 | 0.023 |
| Mauritania, 2001 | 0.3 | 0.4 | 0.4 | 0.5 | 0.3 | 0.4 | 0.032 | −0.053 | 0.117 |
| Mozambique, 1997 | 0.4 | 0.3 | 0.4 | 0.5 | 0.6 | 0.4 | 0.119 | 0.070 | 0.169 |
| Niger, 1998 | 0.3 | 0.1 | 0.3 | 0.1 | 0.4 | 0.2 | 0.010 | −0.270 | 0.290 |
| Rwanda, 2000 | 1.3 | 0.9 | 1.1 | 1.2 | 1.2 | 1.1 | 0.019 | −0.044 | 0.082 |
| Senegal, 1997 | 0.9 | 1.3 | 1.2 | 1.3 | 0.8 | 1.1 | −0.297 | −0.413 | −0.182 |
| South Africa, 1998 | 1.4 | 0.8 | 0.6 | 0.4 | 0.3 | 0.6 | −0.011 | −0.131 | 0.109 |
| Tanzania, 1999 | 1.1 | 1.0 | 0.7 | 0.9 | 0.3 | 0.8 | −0.167 | −0.349 | 0.016 |
| Togo, 1998 | 1.2 | 1.1 | 1.1 | 0.9 | 0.6 | 1.0 | −0.115 | −0.206 | −0.025 |
| Uganda, 2000 | 1.7 | 2.0 | 1.6 | 1.6 | 0.8 | 1.5 | −0.122 | −0.266 | 0.022 |
| Zambia, 2001 | 1.1 | 0.9 | 1.1 | 0.9 | 0.9 | 1.0 | −0.036 | −0.069 | −0.004 |
| Zimbabwe, 2001 | 0.8 | 0.8 | 0.7 | 0.5 | 0.3 | 0.6 | −0.171 | −0.299 | −0.043 |
| **Middle East** | | | | | | | | | |
| Egypt, 2000 | 1.1 | 0.8 | 0.8 | 0.6 | 0.5 | 0.7 | −0.155 | −0.236 | −0.075 |
| Jordan, 1997 | 1.9 | 1.7 | 1.6 | 1.1 | 0.9 | 1.4 | −0.141 | −0.200 | −0.083 |
| Turkey, 1998 | 1.3 | 0.8 | 0.6 | 0.3 | 0.2 | 0.7 | −0.338 | −0.482 | −0.194 |
| Yemen, 1997 | 1.9 | 2.1 | 2.2 | 2.5 | 1.5 | 2.0 | −0.015 | −0.125 | 0.096 |
| **Unweighted average** | 1.2 | 1.1 | 0.9 | 0.8 | 0.5 | 0.9 | −0.133 | — | — |

equality (CI values over 0.4) but are not characterized by much inequality in unwanted fertility. Most of the countries in these latter two groups are located in sub-Saharan Africa, where the concept of excess or unwanted fertility is not yet endemic in the population.

## Effective interventions are less available to the disadvantaged

The final condition needed for an inequity is a disparity between the poorest and wealthiest quintiles in terms of the availability of health technologies and services that address the inequality; in

this case, excess fertility expressed as unwanted fertility. For there to be inequity, the wealthiest must have adequate service coverage and the poorest, inadequate. Obviously, if both the quintiles have inadequate access, a detrimental situation exists, but it is an equitable

Fig. 2. **Relationship between inequality in modern contraceptive use and inequality in unwanted fertility per regional grouping of countries as shown in Table 1**
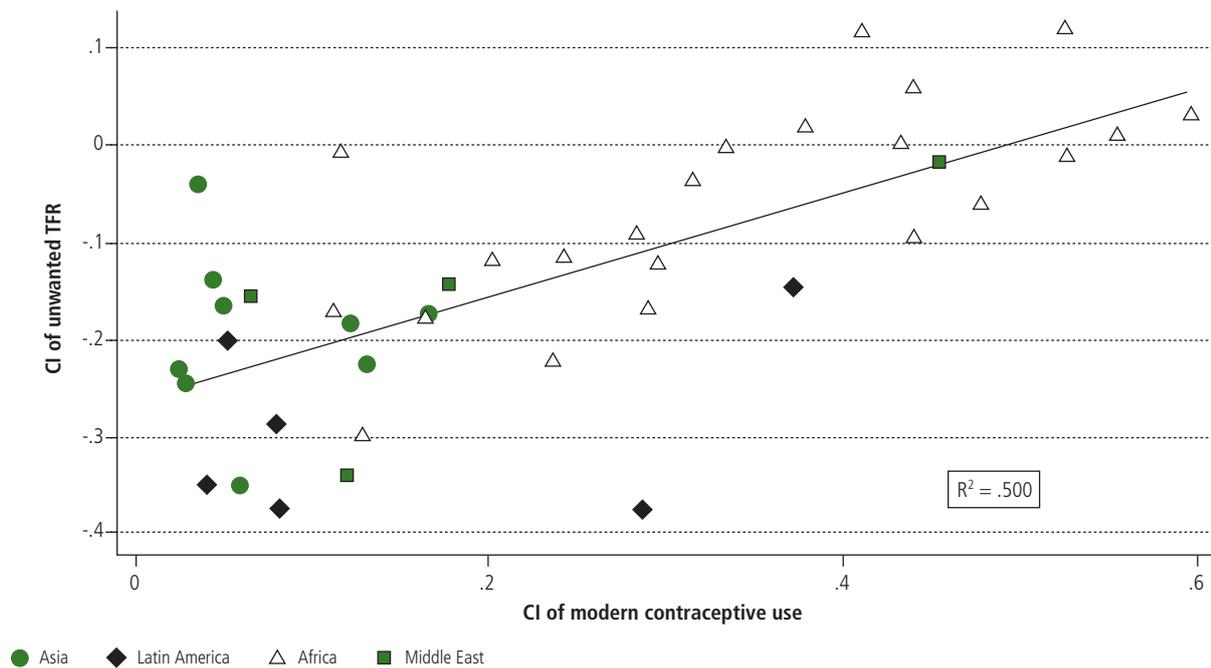


detrimental situation. To determine if an inequitable disparity in family planning services exists between the quintiles, we examine three indicators for childbearing-aged females: exposure to family planning messages over the radio, knowledge of a family planning source and family planning outreach (contact by a family planning worker). These indicators are directly correlated with modern contraceptive practice and reflect the population's access to family planning information, service outlets and community fieldworkers. In all the 41 surveys, female respondents reported whether they have heard a family planning message on the radio in recent months, whether they know of a place to obtain a family planning method and if they have been visited by a fieldworker in the past year who discussed family planning with them.

Table 2 (available on the web version only at http://www.who.int) provides the national prevalence on the three indicators for each of the 41 countries; fieldworker outreach is not available for five countries. Among these countries, the MCPR concentration index values are lowest in Kazakhstan with a CI value of 0.024 and highest in Mauritania at 0.597. Inequity in modern contraceptive prevalence is highest among countries in sub-Saharan Africa, with nine of the ten highest CI values located in this region.

Inequity in radio exposure to family planning messages is highest in Ethiopia (0.459), and for source knowledge and fieldworker contact is highest in Mauritania (0.571 and 0.379 respectively). The Philippines shows the least inequity on all three family planning service coverage indicators (0.011, −0.026, −0.158 respectively) although national coverage levels are moderate and low in the case of source knowledge (17.7%).

In Fig. 3, panels (a) to (c) display the relationship between inequality in the three service coverage indicators and inequality in modern contraceptive prevalence. With increasing inequality in service coverage, inequality in modern contraceptive use rises fairly linearly. The R-square values between the concentration indices for the three indicators and modern contraceptive use are high, respectively 0.392, 0.692 and 0.526. The close relationships between inequalities in radio exposure, source knowledge and fieldworker contact, and inequality in MCPR are further reflected in the regression coefficients or slopes for these lines (not shown). For example, a unit change in the concentration index for radio exposure results in a 0.91 (nearly one unit) change in the concentration index for MCPR. The counterpart changes for source knowledge and fieldworker contact are 1.08 and 1.16 respectively.
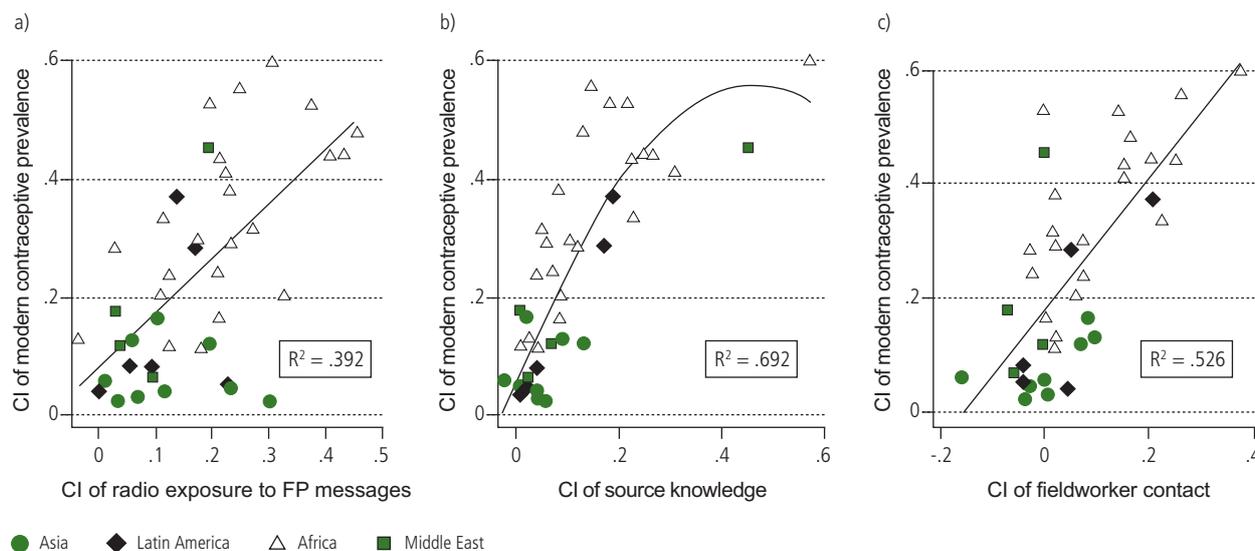
These three indicators evidence the disparities between the wealthiest and poorest segments of the population and their direct correlation with inequality in modern contraceptive use. The fourth characteristic of an inequity is thus met. The poorest women have relatively less access to contraceptive service coverage than wealthier women and are less likely to use modern contraceptives. This places them at higher risk of unplanned pregnancies and associated negative outcomes for mother and child.

All three panels in Fig. 3 help identify country clusters with high income inequalities in both service coverage and MCPR, where targeted expansion of interventions among the disadvantaged can reduce inequity. Recent stalls in the fertility transitions of several sub-Saharan African countries show the need for intensification of family planning intervention efforts.

## Discussion

Inequity is a useful organizing concept for mobilizing resources for reducing mortality and pointing out the need to develop special health interventions that target the poor. However, when considering reproduction and the role of family planning interventions, the equity concept needs to be applied more cautiously than in the case with other health interventions.

Fig. 3. **Relationships between inequality in a) radio exposure to family planning (FP) radio messages, b) source knowledge and c) fieldworker contact, and inequality in modern contraceptive use in 41 developing countries identified in Table 1**

a)

CI of modern contraceptive prevalence

$R^2 = .392$

CI of radio exposure to FP messages

b)

CI of modern contraceptive prevalence

$R^2 = .692$

CI of source knowledge

c)

CI of modern contraceptive prevalence

$R^2 = .526$

CI of fieldworker contact

● Asia    ◆ Latin America    △ Africa    ■ Middle East

Equity analyses are useful in countries where fertility is much higher among the poor, where the poor do not want the high fertility they experience, and where weak family planning service coverage of the poor is associated with their lower contraceptive use and higher unwanted fertility. The policy and programmatic message is clearly that family planning programs in these areas need to increase their focus on the poor.

However, the concept of equity does not uniformly fit well with fertility, primarily because children are desired and, not infrequently, many children are desired. Table 1 shows that several sub-Saharan African countries had unwanted fertility CIs around zero. Their equity was not characterized by universally low fertility, high contraceptive use and good service coverage. Rather, their equity was characterized by universally high fertility, low contractive use and poor service coverage.

From a public health perspective, applying the equity concept to countries like Malawi has limitations. Malawi and Indonesia have comparable CIs for unwanted fertility, CI values of −0.008 and −0.041 respectively. But Malawi's TFR is 6.5, one of the highest in the world and more than twice as high as Indonesia's TFR of 2.6. If Indonesia were to eliminate all of its unwanted fertility, 0.4, it would essentially be at fertility replacement level of 2.1. If Malawi

eliminated all of its unwanted fertility, 1.1, it would still have a TFR of 4.1, well above that for the developing world as a whole at 3.0.

An inequity in unwanted fertility has ethical implications, the principal one being the poor's lack of access to information and services to prevent high-risk births. Countries with equity at very high levels of fertility and low levels of unwanted fertility, e.g. Burkina Faso, have no apparent ethical issue; thus the inequity advocacy card can not legitimately be played. However, high fertility equity should not lead to benign neglect any more than equity in high mortality or very low bed net coverage to combat malaria should lead to complacency.[19] Still, one needs to appreciate the inherent harms of children dying unnecessarily from malaria compared with the moral ambivalence and programmatic challenges when confronting very high and desired fertility equitably distributed across a population. In countries with high wanted fertility, policy-makers and health providers need to be especially careful to avoid a paternalistic approach of providing the services they feel the population needs rather than those the people desire.

Reproductive health, including family planning, was purposely excluded from the MDGs in 2000 and there have been efforts to get reproductive health

mainstreamed into all the MDGs.[26] The most logical and convincing case, using mortality reduction as a goal, has been made for inclusion in the MDGs for child and maternal health.[5] As with other MDGs, equity is the binding concept for justifying and promoting these two MDGs. Our analysis suggests that looking at family planning and fertility through an equity lens is justified for those countries with joint inequalities in unwanted fertility and access to family planning. In other countries, where there is little or no unwanted fertility inequity and where high fertility among the poor contributes to other health inequities, greater emphasis should be given to the health benefits of birth spacing and couples' rights to reproductive health information and services. This emphasis is especially appropriate in many sub-Saharan African countries. ■

## Résumé

### Fécondité non désirée parmi les populations défavorisées : un problème d'équité ?

**Objectif** Déterminer si la plus forte fécondité et l'usage plus limité de la contraception parmi les segments les plus pauvres de la société doivent être considérés comme une inégalité, reflétant un plus grand désir chez les personnes pauvres de constituer des familles nombreuses, ou comme un problème d'équité : un résultat de la pauvreté traduisant l'incapacité à obtenir la fécondité souhaitée dans la même mesure que les segments plus riches de la société.

**Méthodes** A partir des enquêtes démographiques et de santé les plus récemment réalisées dans 41 pays, nous avons étudié les différences de fécondité en tenant compte des moyens contraceptifs modernes utilisables, la fécondité non désirée (définie comme la fécondité en excès par rapport à la fécondité souhaitée) et la disponibilité de services de planification familiale pour les segments pauvres et riches de la société. Dans chaque enquête, l'indice de revenu a été utilisé pour constituer les quintiles les plus riches et l'indice de concentration des inégalités de revenus a été déterminé.

**Résultats** La relation entre l'indice de concentration trouvé pour le taux de fécondité totale et l'utilisation de moyens contraceptifs est linéaire ($R^2 = 0,289$). Le nombre de naissances non désirées est deux fois plus élevé dans le quintile le plus pauvre que dans celui le plus riche (respectivement 1,2 et 0,5), bien qu'il existe de grandes variations entre les 41 pays considérés. L'indice de concentration correspondant à notre mesure de la disponibilité de services de planification familiale (messages radiophoniques, connaissance des services et contact avec des agents de terrain) présentait une forte corrélation positive avec l'indice de concentration de la prévalence des moyens contraceptifs modernes ($R^2$ valant respectivement 0,392, 0,692 et 0,526).

**Conclusion** Dans nombre de pays, le taux de fécondité plus élevé et le recours plus limité aux moyens contraceptifs observés chez les plus démunis par comparaison avec les populations aisées doivent être considérés comme un problème d'équité.

## Resumen

### Fecundidad no deseada entre los pobres: ¿una forma de inequidad?

**Objetivo** Determinar si la mayor fecundidad y el bajo uso de anticonceptivos entre los sectores más pobres de la sociedad debe considerarse una forma de desigualdad, que reflejaría una preferencia de los pobres por formar familias numerosas, o bien una forma de inequidad, consistente en que se impediría a los pobres reducir su fecundidad en la misma medida en que pueden hacerlo los sectores más ricos de la sociedad.

**Métodos** Utilizando las Encuestas de Demografía y Salud más recientes de 41 países, analizamos las diferencias de fecundidad en función del uso de anticonceptivos modernos, la fecundidad no deseada (definida como la fecundidad real por encima de la deseada) y la disponibilidad de servicios de planificación familiar entre los sectores más pobre y más rico de la sociedad. Se determinaron los quintiles de riqueza a partir del índice de recursos obtenido con cada encuesta, y se calculó el índice de concentración (IC) de la desigualdad de ingresos para las variables relacionadas con la salud.

**Resultados** Se observó una relación lineal entre el IC hallado en la tasa total de fecundidad y el uso de anticonceptivos, con una $R^2$ de 0,289. Los nacimientos no deseados en el quintil más pobre superaban en más del doble los hallados en el quintil más rico: 1,2 y 0,5 respectivamente; no obstante, había amplias diferencias entre los 41 países. El IC de nuestra medida de la disponibilidad de servicios de planificación familiar (mensajes radiofónicos, conocimiento de los servicios y contacto con los trabajadores sobre el terreno) estaba muy positivamente asociado al IC de la prevalencia de uso de anticonceptivos modernos, con $R^2$ de, respectivamente, 0,392, 0,692 y 0,526.

**Conclusión** En muchos países, la mayor fecundidad y el bajo uso de anticonceptivos detectados entre los pobres en comparación con la población rica deben considerarse una forma de inequidad.

## ملخص

### الخصوبة غير المرغوبة بين الفقراء؛ هل هي شكل من أشكال الجور؟

**الهدف:** لتعيين فيما إذا كان من الواجب النظر إلى الخصوبة المرتفعة وتدني معدلات استخدام مانعات الحمل بين القطاعات الفقيرة في المجتمع على أنها شكل من أشكال الظلم، وأنها تعكس رغبة حميمة لدى الفقراء في العيش ضمن عائلات كبيرة، أو أنها شكل من أشكال الجور، فالفقراء يُمنَعون من بلوغ ما يرغبون الوصول إليه من معدلات الخصوبة بنفس الدرجة التي يصل إليها الأغنياء في المجتمع.

**الطريقة:** باستخدام المسوحات الصحية والديمغرافية الأكثر حداثة والمستمدة من 41 بلداً، حللنا الفروق في الخصوبة في ضوء الاستخدام المعاصر لموانع الحمل، ووجدنا أن الخصوبة غير المرغوب بها (والتي تعرف بأنها الخصوبة الفعلية التي تزيد على الخصوبة المرغوبة فيها) وتوافر خدمات تنظيم الأسرة المتوافرة لدى أكثر الطبقات فقراً وأكثرها غنى في المجتمع. وقد استخدم منسب التركيز في كل دراسة مسح لبناء شرائح مئوية خمسية للغنى ومنسب لتركيز الظلم في توزيع الدخل في أحد المتغيِّرات.

**الموجودات:** لقد اتضح أن العلاقة بين منسب التركيز للمعدل الإجمالي

**الاستنتاج:** في الكثير من البلدان، وجد أن المعدلات الأعلى للخصوبة والمعدلات الأخفض لاستعمال موانع الحمل لدى الأكثر فقراً مقارنة بالأكثر غنى من السكان، وينبغي اعتبار ذلك شكلاً من أشكال الجور.

للخصوبة ولاستخدام موانع الحمل هي علاقة خطية. وأن قيمة مربع مدى التمثيل $R^2$ كانت 0.289. وقد كانت الولادات غير المرغوبة لدى الشريحة المئوية الخمسية الأشد فقراً 1.2، وهي بذلك أكثر من ضعفي ما وجد لدى الشريحة المئوية الخمسية الأكثر غنى (0.5)، وذلك رغم وجود تفاوت واسع في البلدان المدروسة وعددها 41 بلداً. وقد كان منسب التركيز في قياسنا لتوافر تنظيم الأسرة (رسائل إذاعية، معلومات حول خدمات العاملين وطرق التواصل مع العاملين الميدانيين) في غالب الأحيان إيجابي الترابط مع منسب التركيز في معدل انتشار موانع الحمل العصرية؛ فقد كانت قيم مربع مدى التمثيل للرسائل الإذاعية 0.392 وللمعلومات حول خدمات العاملين 0.692 وللمعلومات حول طرق التواصل مع العاملين الميدانيـن 0.526.

**Research**
**Duff Gillespie et al.**
Is unwanted fertility an inequity?

## References

1. *United Nations millennium declaration*. United Nations. http://www.un.org/millennium/declaration/ares552e.pdf (accessed January 27, 2006).

2. *Millennium development goals*. Department of Economic and Social Affairs, Statistic Division, United Nations, 2003. http://unstats.un.org/unsd/mi/pdf/mdglist.pdf (accessed January 27, 2006).

3. *World development report 2004: making services work for poor people*. Washington (DC), The World Bank and New York, Oxford University Press, 2003.

4. *World development report 2006: equity and development*. Washington (DC), The World Bank and New York, Oxford University Press, 2005.

5. United Nations Millennium Project. *Who's got the power? Transforming health systems for women and children: report of the Task Force on Child Health and Maternal Health*. London: Earthscan, 2005. http://www.unmillenniumproject.org/documents/maternalchild-complete.pdf (accessed January 30, 2006).

6. Anand S, Peter F, Sen A, editors. *Public health, ethics, and equity*. New York, Oxford University Press, 2004.

7. Gwatkin DR, Wagstaff A, Yazbeck AS, editors. *Reaching the poor with health, nutrition, and population service. What works, what doesn't, and why*. Washington, The World Bank, 2005.

8. Braveman P. Health Disparities and health equity: concepts and measurement. *Annu Rev Public Health* 2006;27:167-94.

9. Whitehead M. The concepts and principles of equity and health. *Int J Health Serv* 1992;22:429-45.

10. Victora CG, Wagstaff A, Schellenberg JA, Gwatkin D, Claeson M, Habicht JP. Applying an equity lens to child health and mortality: more of the same is not enough. *Lancet* 2003;362:233-41.

11. Culyer AJ, Wagstaff A. Equity and equality in health and health care. *J Health Econ* 1993;12:431-57.

12. Gwatkin DR. Health inequalities and the health of the poor: what do we know? What can we do? *Bull World Health Organ* 2000;78:3-18.

13. Macro ORC. Demographic and health surveys. http://www.measuredhs.com (accessed January 27, 2006).

14. *Quantitative techniques for health equity analysis: technical note #4: measuring living standards: household consumption and wealth indices*. The World Bank. http://siteresources.worldbank.org/INTPAH/Resources/Publications/Quantitative-Techniques/health_eq_tn04.pdf (accessed January 27, 2006).

15. *Quantitative techniques for health equity analysis: technical note #7: the concentration index*. The World Bank. http://siteresources.worldbank.org/INTPAH/Resources/Publications/Quantitative-Techniques/health_eq_tn07.pdf (accessed January 27, 2006).

16. Rutstein SO, Roja G. *Guide to DHS statistics*. Calverton, ORC Macro, 2003. http://www.measuredhs.com/accesssurveys/Guide_DHS_Statistics.pdf (accessed January 27, 2006).

17. Bongaarts J, Potter RG. *Fertility, biology, and behaviour: an analysis of the proximate determinants*. New York, Academic Press, 1983.

18. *World population prospects: the 2004 revision* [wall chart], United Nations. http://www.un.org/esa/population/publications/WPP2004/World_Population_2004_chart.pdf (accessed January 27, 2006).

19. Victora CG, Hanson K, Bryce J, Vaughan JP. Achieving universal coverage with health interventions. *Lancet* 2004;364:1541-8.

20. Webster J, Lines J, Bruce J, Armstrong Schellenberg JR, Hanson K. Which delivery systems reach the poor? A review of equity of coverage of ever-treated nets, never-treated nets, and immunisation to reduce child mortality in Africa. *Lancet Infect Dis* 2005;5:709-17.

21. *Safe abortion: technical and policy guidance for health systems*. Geneva, World Health Organization, 2003.

22. *2005 world population data sheet*. Washington, Population Reference Bureau (PRB), 2005.

23. Sheth SS. Missing female births in India. *Lancet* 2006;367:185-6.

24. Norton M. New evidence on birth spacing: promising findings for improving newborn, infant, child, and maternal health. *International Journal of Gynecology & Obstetrics* 2005;89:S1-6.

25. *Sharing responsibility: women, society and abortion worldwide*. Washington, Allan Guttmacher Institute, 1999.

26. Crossette B. Reproductive health and the millennium development goals: the missing link. *Stud Fam Plann* 2005;36:71-9.