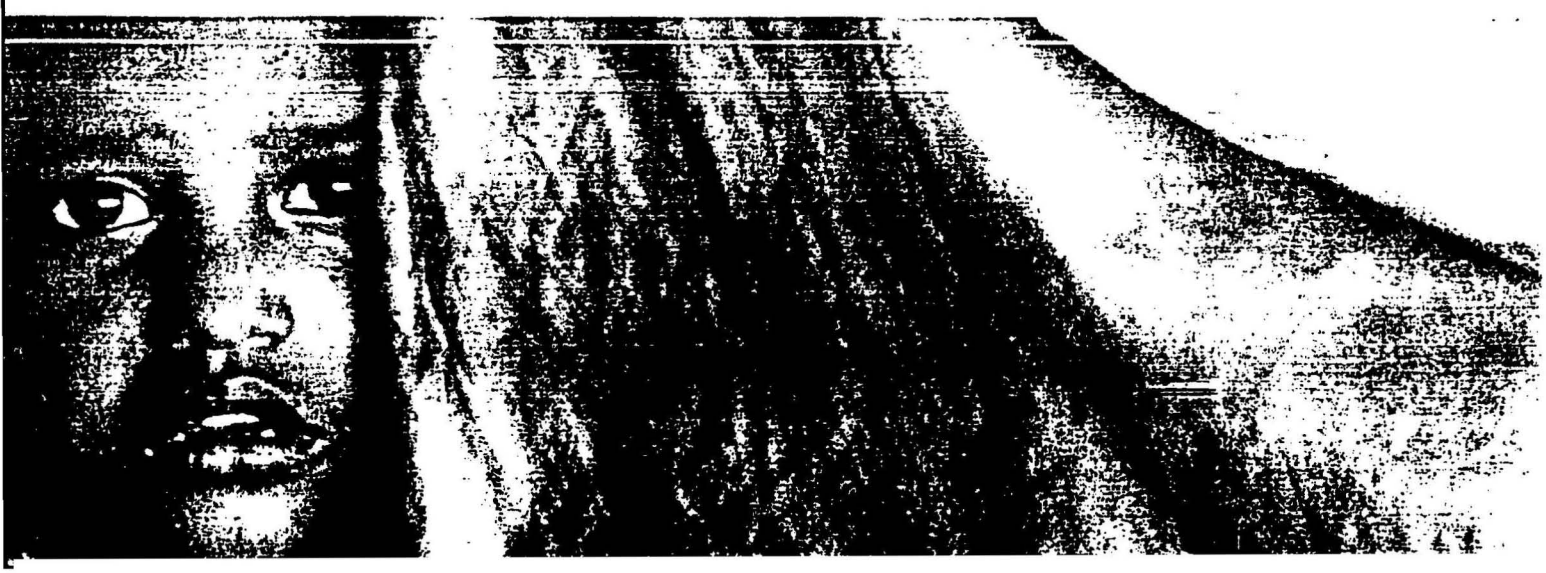
Edited by
Timothy Evans
Margaret Whitehead
Finn Diderichsen
Abbas Bhuiya
Meg Wirth

CHALLENGING INEQUITIES IN HEALTH

From Ethics to Action (2001)



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Bangladesh: An Intervention Study of Factors Underlying Increasing Equity in Child Survival

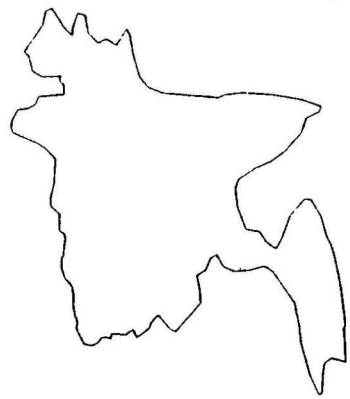
ABBAS BHUIYA, MUSHTAQUE CHOWDHURY, FARUQUE AHMED, AND ALAYNE M. ADAMS

Bangladesh has in the last two decades witnessed a large decline in infant and child mortality, a health gain that is particularly remarkable given its conditions of prevailing poverty and inadequate health services. Bangladesh ranks among the poorest and most densely populated countries in the developing world, with less than 45% of its population having access to primary health care services beyond childhood immunization and family planning (United Nations Development Program 1997). Malnutrition rates are among the highest in the world, with more than one-third of infants born annually classified as low birth weight (less than 2.5 kg). Approximately two-thirds of children under 6 years of age are underweight or stunted, and over 17% are moderately to severely wasted (Bangladesh Bureau of Statistics [BBS] 1997).

Bangladesh is also one of the few countries in the world where gender differentials in life expectancy and child survival contradict expected patterns that reflect women's biological advantage (D'Souza and Chen 1980; Bhuiya et al. 1986, 1989; Koenig and D'Souza 1986; Sen 1990). Numerous national and regional surveys have documented large differentials in child survival following the first 5 months of life, when the influence of social factors such as male preference in intrahousehold food distribution and sickness care become more apparent (Chen et al. 1981; Bhuiya et al. 1987). Indeed, gender bias in favor of males is so ingrained in the social consciousness that even mothers' education, the oft-cited panacea for improved child survival, appears to have no perceptible effect on male–female differentials in survival (Bhuiya and Streatfield 1991).

Given this context, the precipitous decline in child mortality from approximately 20 per 1000 mid-year population in 1981 to 7 per 1000 in 1996 (BBS 1990, 1996) raises two important questions. First, what factors underlie these remarkable improvements in child survival? Concomitant with observed trends in child mortality has been an exponential growth in large-scale public health and poverty alleviation programs, the overwhelming majority of which have been undertaken by the nongovernmental sector. To what extent do the benefits of these programs explain these trends? Second, have improvements in child survival been experienced equitably by all groups in the population? Specifically, are differentials between socioeconomic and gender groups narrowing, such that the disadvantaged

Bangladesh



Total population (millions), 1997	122.7
Human development index, 1999	0.440
Human development index rank, 1999	150
Infant mortality rate (per 1,000 live births), 1997	81
Real GDP per capita (PPP$), 1997	1,050
Public spending on health as percentage of GDP, 1995	1.2

Source: UNDP 1999 (Human Development Report)

are experiencing disproportionately large improvements in survival?

This chapter examines these two questions using published and unpublished national and district-level data spanning the period 1982 to 1996. It considers the impact of health extension and poverty alleviation programs on trends in child mortality from socioeconomic and gender equity perspectives, with a view to informing equity-oriented policy in Bangladesh and elsewhere.

The Definition and Measurement of Socioeconomic and Gender Equity in Health

Health equity refers to a state in which good health is distributed optimally and fairly regardless of socioeconomic status or gender. For the purposes of this chapter, the examination of equity in health is confined to socioeconomic and gender differentials in the child mortality rate (CMR), expressed as the number of deaths among children aged 1 through 4 years per 10,000 mid-year population. This age group represents a stage in the life cycle that is particularly sensitive to socioeconomic context (weaning, vulnerability to environmental exposures, and so forth) and avails sufficient numbers of deaths to make robust intergroup comparisons.

Inequity in child mortality is measured in terms of socioeconomic status and gender using Sen's concepts (1992) of "shortfall" and "attainment" equality. Sen describes attainment equality as the comparison of absolute levels of achievement between groups. Attainment equality assumes that each group is capable of reaching the same absolute level of a particular health state. For the equity assessment of socioeconomic differentials in health, it could be argued that there are no unavoidable (e.g. biological) or justified reasons why expectations of health status or access to health care should differ according to income or education. Therefore, if the optimal life expectancy is 70 years, socioeconomic equity is attained when all socioeconomic groups have a life expectancy of 70 years. In other words, attainment equality is assessed by comparing the achievement of different socioeconomic groups against a common optimal norm.

In contrast, when assessing the fairness of gender differentials in health, the assumptions of a common norm for both men and women may not be justified. There is a large body of evidence that supports the idea of a biological advantage in survival of females over males (Waldron 1983; Anand 1993). As stated by Anand and Sen (1995: 4–5) "given symmetric treatment in nutrition, health care, and other conditions of living . . . women have systematically lower age-specific mortality rates than men, resulting in a life expectancy for women that is significantly higher than that for men—possibly by some five years or more." For this reason, Sen (1992) defines equality between gender groups in terms of shortfalls from the optimal value that each sex can respectively attain. If the maximal life expectancy of women and men is 85 and 80 years, respectively, yet a life expectancy of only 60 years is achieved, the "shortfall equality" for women (25 years) would be greater than for men (20 years).

Materials and Methods

Data Sources

The health and socioeconomic data used in this chapter come from Matlab, a rural subdistrict situated about 55 km southeast of Dhaka, the capital of Bangladesh. A low-lying deltaic area intersected with numerous rivers and canals, Matlab is subject to annual flooding of variable severity. Communication between the villages of Matlab is achieved mostly on foot and by rickshaw and small nonmotorized boats. Rice constitutes the staple food and is cultivated in two seasons. Given

that a large proportion of the population is landless, agricultural labor, share-cropping, and fishing represent the main sources of livelihood in Matlab. Rates of illiteracy are high (40% in 1996) and increase with age. Differentials between male and female illiteracy rates are also more apparent in older age groups (Razzaque et al. 1998).

Since 1963, Matlab has served as the field station of the International Centre for Diarrhoeal Disease (ICDDR,B), an international research institution based in Bangladesh and renowned for its work on demographic surveillance and maternal and child health research and service delivery. In 1966, ICDDR,B established a demographic surveillance system (DSS) involving the monthly house to house registration of vital events such as births, deaths, migrations, and marriages in approximately 142 villages in Matlab (population, 211,306) (D'Souza 1984; Fauveau 1994; van Ginneken et al. 1998). Periodic cross-sectional censuses have also been conducted, with the inclusion of socioeconomic data in 1974, 1982, and 1996. In 1977, ICDDR,B initiated a Maternal and Child Health and Family Planning Program (MCH-FP) in one-half of the DSS area. The program currently includes family planning counseling, contraceptive provision, safe-delivery services, and illness treatment and referral for women and their children. These village-level services are provided by Community Health Workers and supported by midwives based in four health subcenters (Fauveau 1994).

Further data are furnished by the BRAC-ICDDR,B Joint Project, a collaborative research initiative that was forged in 1992 when BRAC introduced its Rural Development Program into Matlab. The largest nongovernmental organization in Bangladesh, BRAC operates in over 50,000 villages and has a total membership of over 2 million families (BRAC 1997). With the dual goals of poverty alleviation and women's development, BRAC undertakes a variety of development activities through its Rural Development Program, including group formation in Village Organizations, skill development training, essential health care, and the provision of nonformal education and collateral free loans for income-generating activities (Lovell 1992; Chowdhury and Alam 1997). The large majority of program activities are targeted to poor women and children. In 1992, a baseline survey of 12,000 households was conducted prior to the introduction of BRAC's rural development activities. A subsample was resurveyed 3 years later in 1995, and a post-test on the full sample was conducted in 1999.

The BRAC-ICDDR,B Joint Project aims to examine prospectively the joint and independent effects of health and socioeconomic development interventions on human well being (Bhuiya and Chowdhury 1995; Chowdhury et al. 1995). Linked to the DSS, the study design incorporates four distinct intervention cells where (1) only BRAC's socioeconomic development program is operating; (2) only intensive health extension activities (MCH-FP) are provided by ICDDR,B; (3) both socioeconomic development and health extension activities are undertaken; and (4) only government services are provided (comparison cell).

The analyses in this chapter are based on longitudinal DSS data collected between 1980 and 1996 and socioeconomic data from censuses carried out in 1982 and 1996. These data are linked with results from the BRAC-ICDDR,B Joint Project survey in 1995 to examine the impact of health extension and socioeconomic development on gender and socioeconomic inequality in child mortality.

Data Analysis

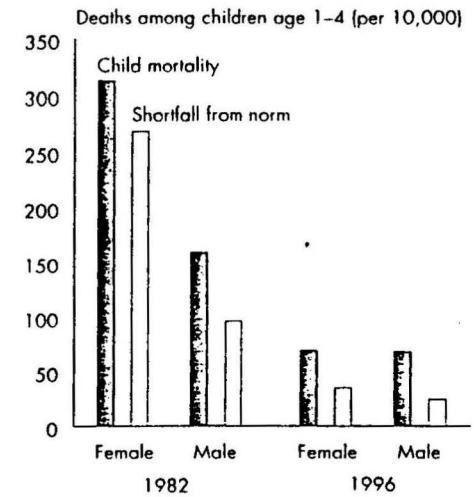
Mortality rates for children aged 1 to 4 years were calculated by dividing the total child deaths in the year by the mid-year population using DSS data. To calculate gender differentials in child mortality in 1982 and 1996 and to determine trends over time, measures of shortfall equality were derived using Japanese male and female child mortality rates from 1982 and 1994 as norms for comparison (World Health Organization 1984, 1996). Japan is selected as a normative standard given that its child mortality rate ranks among the lowest in the world and its female longevity is the highest.

To assess changes in socioeconomic differentials in child survival, census mortality data for 1982 and 1996 were compared according to household socioeconomic status. Area of the household dwelling (m^2) was selected as the principle measure of socioeconomic status given its pertinence to the rural Bangladeshi context of acute land shortage and high population density. Further substantiating its selection is a study by Islam and Becker (1981) in Matlab indicating the comparative reliability and validity of dwelling size over other measures such as occupation, education, and income calculated on the basis of annual household land yield. Dwelling area was categorized into three groups that represent different levels of socioeconomic status: the "poor" (less than 15.7 m^2), the "middle-income" (between 15.8 and 22.5 m^2), and the "wealthier" group (greater than 22.6 m^2). Using Sen's concept of attainment equality, child mortality is expressed in terms of "shortfall" from optimal Japanese norms to assess socioeconomic group differences and trends over time.

The impact of the socioeconomic development programs on child survival is assessed using data from the BRAC-ICDDR,B Joint Project. A cohort of children born during 1993–1997 were prospectively studied and life-table survival curves calculated for three groups of children identified on the basis of whether or not they came from poor households. In this analysis, socioeconomic status is defined according to BRAC's eligibility criteria that participating households own less than 0.5 hectares of land and rely on wage labor income for at least 100 days a year. The first group constitutes children from households participating in BRAC's Rural Development Program (BRAC member households), the second group are children from eligible households who did not join BRAC (poor nonmember), and the third group is comprised of children from noneligible, relatively better off, households (rich nonmember).

Finally, to assess the impact of ICDDR,B's MCH-FP health extension activities on childhood mortality and trends in gender and socioeconomic inequity, children were grouped based on whether their households were located in the catchment area receiving intensive health extension services (the MCH-FP group) or in the nonintervention area (the comparison group).

Figure 1 Child mortality rate and shortfall from norm by sex in Matlab, Bangladesh, 1982 and 1996



Note: The norm for 1982 is the 1982 Japanese child mortality rate (49 for females, 63 for males), and that for 1996 is the 1994 Japanese rate (35 for females, 44 for males).
Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data

Findings

Gender Inequity in Child Mortality

As described above, gender inequity in child mortality in Matlab is assessed using Sen's concept of shortfall equality, which measures achievement vis à vis gender-appropriate norms. Child mortality rate (CMR) is expressed per 10,000 mid-year population to make more apparent gender differences in optimal and actual attainment.

As shown in Figure 1, in 1982 the child mortality rate is strikingly higher among girls than boys (313 to 96 per 10,000, respectively). This disparity is even more vivid using measures of shortfall equality, whereby the levels of shortfall are almost three times

Table 1 Child mortality rate and shortfall from norm by socioeconomic status in Matlab, Bangladesh, 1982 and 1996
(per 10,000; age 1–4)

	1982		1996		
Socioeconomic status (by square meters of dwelling area)	Child mortality rate	Shortfall from norm[a]	Child mortality rate	Shortfall from norm[a]	Reduction in shortfall, 1982–96
Poor (less than 15.7)	322	266	70	30	236
Middle income (15.8–22.5)	278	222	104	64	158
Wealthy (22.6 or more)	163	107	46	6	101
All	233	177	68	28	149

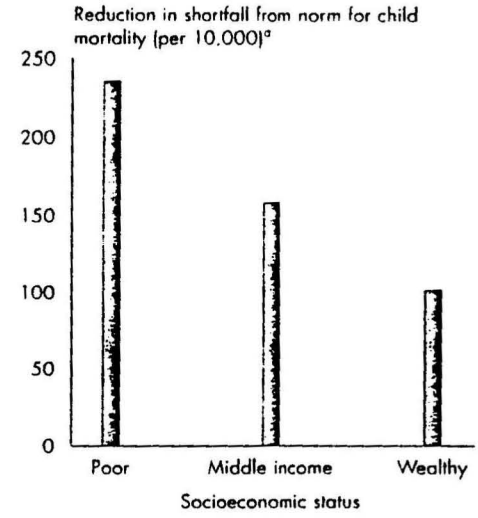
a. The norm for 1982 is the 1982 Japanese child mortality rate (56) and that for 1996 is the 1994 Japanese rate (40).
Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data

greater for girls than for boys (280 vs. 96 per 10,000, respectively). By 1996, gender differentials in child mortality rate have all but disappeared (69 and 68 per 10,000 respectively). While the shortfall from Japanese norms also declines over this period, in 1996 it remains almost 50% higher for girls than for boys (34 vs. 24 per 10,000, respectively). The absolute reduction in shortfall between 1982 and 1996, however, indicates that substantially greater gains were experienced among girls (235 per 10,000) than among boys (72 per 10,000). Otherwise stated, over this 15 year period, there were 163 more deaths prevented among girls per 10,000 mid-year population than among boys.

Socioeconomic Inequity in Child Mortality

An assessment of the degree of socioeconomic inequity in child mortality over the interval 1982 to 1996, using household dwelling area as an indicator of socioeconomic status, is summarized in Table 1. In 1982, a marked socioeconomic gradient is apparent in absolute measures of child mortality and child mortality expressed as the degree of "shortfall" from optimal norms. Poor households experienced a child mortality rate of 322 per 10,000. This dropped to 278 per 10,000 in the middle-income group and further still to 163 per 10,000 among relatively wealthy households. In 1996, the steep decreases in CMR across all socioeconomic strata have flattened this gradient, although the lowest CMRs continue to be reported by households belonging to the wealthiest group. Trends in the reduction in shortfall also reveal similar dramatic improvements for all strata. Notably, the overall gain in socioeconomic equity is greatest among children from the poorest households, followed by those in the middle-income and wealthier households (Fig. 2).

Figure 2 Gains in socioeconomic equity in child mortality rate in Matlab, Bangladesh, 1982–96



Note: Socioeconomic status is based on square meters of dwelling area; see table 1.
a. The norm for 1982 is the 1982 Japanese child mortality rate (56), and that for 1996 is the 1994 Japanese rate (40).
Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data.

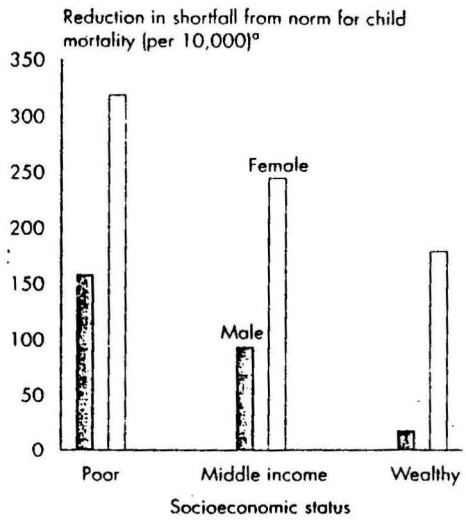
To evaluate how socioeconomic status affects trends in gender equity in CMR, shortfall measures were applied (Table 2). In 1982, a striking survival disadvantage for females is evident across all socioeconomic strata. This disparity is particularly vivid when com-

Table 2 Child mortality rate and shortfall from norm by socioeconomic status and sex in Matlab, Bangladesh, 1982 and 1996
(per 10,000; age 1–4)

	1982				1996					
Socioeconomic status (by square meters of dwelling area)	Child mortality rate		Shortfall from norm[a]		Child mortality rate		Shortfall from norm[a]		Reduction in shortfall, 1982–96	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Poor (less than 15.7)	247	404	184	355	70	71	26	36	158	319
Middle income (15.8–22.5)	210	357	147	308	110	98	54	63	93	245
Wealthy (22.6 or more)	87	244	24	195	42	51	7	16	17	179

a. The norm for 1982 is the 1982 Japanese child mortality rate (63 for males, 49 for females), and that for 1996 is the 1994 Japanese rate (44 for males, 35 for females).
Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data.

Figure 3 Gains in gender equity in child mortality rate by socioeconomic status in Matlab, Bangladesh, 1982–96



Note: Socioeconomic status is based on square meters of dwelling area; see table 1.
a. The norm for 1982 is the 1982 Japanese child mortality rate (63 for males, 49 for females), and that for 1996 is the 1994 Japanese rate (44 for males, 35 for females).
Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data.

paring male and female shortfalls from norms (see Fig. 3). In poor and middle-income groups, the levels of shortfall are approximately two times greater for women than for men. The most pronounced gender differential in shortfall is apparent in the wealthier group, where the shortfall is eight times greater for girls than for boys.

In 1996, child mortality levels are dramatically lower and gender differentials are much less apparent between boys and girls. Calculation of shortfall equality reveals that the mortality rate for females is about one-tenth the level reported in 1982. Curiously, in 1996 the middle-income group had the highest shortfall for both boys and girls. In general, however, the trend in shortfall gender equality between 1982 and 1996 suggests massive improvements in female (relative to male) survival across all socioeconomic strata. The greatest absolute and relative gains in child survival are experienced by girls in the poorest socioeconomic circumstances. It is also interesting that the relative shortfall between girls and boys is greatest in the wealthier group in both 1982 and 1996.

The Effect of MCH-FP Health Extension Activities on Gender and Socieconomic Inequity

Table 3 presents CMRs for boys and girls in 1982 and 1996 based on whether they have been exposed to the intensive MCH-FP health extension activities of ICDDR,B. Sharp declines in CMRs are observed among boys and girls in both groups during the period 1982 to 1996.

Table 4 presents data on socioeconomic differentials in CMRs as a function of exposure to the MCH-FP health extension activities of ICDDR,B. In 1982, a socioeconomic gradient in absolute levels of child mortality and measures of shortfall is evident in both MCH-

Table 3 Child mortality rate by sex and participation in maternal and child health activities in Matlab, Bangladesh, 1982 and 1996
(per 10,000; age 1–4)

	1982				1996					
Participation in maternal and child health activities	Child mortality rate		Shortfall from norm[a]		Child mortality rate		Shortfall from norm[a]		Reduction in shortfall, 1982–96	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Yes	120	264	57	215	57	64	13	29	44	186
No	193	365	130	316	76	84	32	49	98	267

a. The norm for 1982 is the 1982 Japanese child mortality rate (63 for males, 49 for females) and that for 1996 is the 1994 Japanese rate (44 for males, 35 for females).
Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data.

A payment for a family planning consultation, Bangladesh. *Source:* Norman Daniels.

Table 4 Child mortality rate and shortfall from norm by socioeconomic status and participation in maternal and child health (MCH) activities in Matlab, Bangladesh, 1982 and 1996
(per 10,000; age 1–4)

Socioeconomic status (by square meters of dwelling area)	1982				1996				Reduction in shortfall, 1982–96	
	Child mortality rate		Shortfall from norm[a]		Child mortality rate		Shortfall from norm[a]			
	MCH	No MCH	MCH	No MCH	MCH	No MCH	MCH	No MCH	MCH	No MCH
Poor (less than 15.7)	147	173	97	117	60	81	20	41	77	76
Middle income (15.8–22.5)	124	151	68	95	71	126	31	86	37	9
Wealthy (22.6 or more)	64	98	8	42	52	41	12	1	7	41

a. The norm for 1982 is the 1982 Japanese child mortality rate (56), and that for 1996 is the 1994 Japanese rate (40).
Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data.

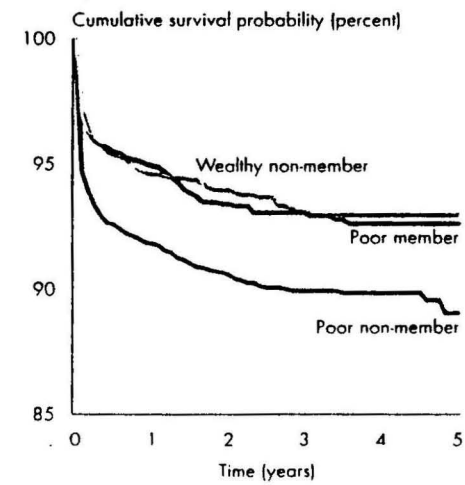
FP and comparison areas. The magnitude of shortfall in each socioeconomic group, however, is greater in the comparison area than in the MCH-FP area. In 1996, the socioeconomic gradient is no longer evident due to the dramatic declines in CMR in the lowest socioeconomic group and similar improvements in the middle group. In both the MCH-FP and comparison areas the steepest declines in CMR in the period 1982 to 1992 are observed in the poorest group, with more marginal declines in the middle-income group. Between 1982 and 1996, the MCH-FP area registers greater absolute and relative shortfall reductions in the poorest and middle-income groups compared with the comparison area.

Rural Development and Socioeconomic Equity in Child Mortality

Figure 4 presents the cumulative life-table survival probability of three groups of children categorized on the basis of whether they lived in households that met the eligibility criteria for participation in BRAC's Rural Development Program, and/or whether their mothers were currently BRAC members. The curves suggest that the children of mothers who participate in BRAC's programs have a higher survival probability than poor nonmembers ($p = 0.0002$) and are statistically similar to "rich nonmembers" ($p = 0.9171$). If BRAC eligibility is considered a proxy measure for socioeconomic status, it appears that socioeconomic disparities in child mortality are decreasing between the rich and poor households that are beneficiaries of the women-focused socioeconomic development activities of BRAC. Socioeconomic differentials in CMR between BRAC members and poor nonmembers who do not benefit from the program, however, appear to be widening.

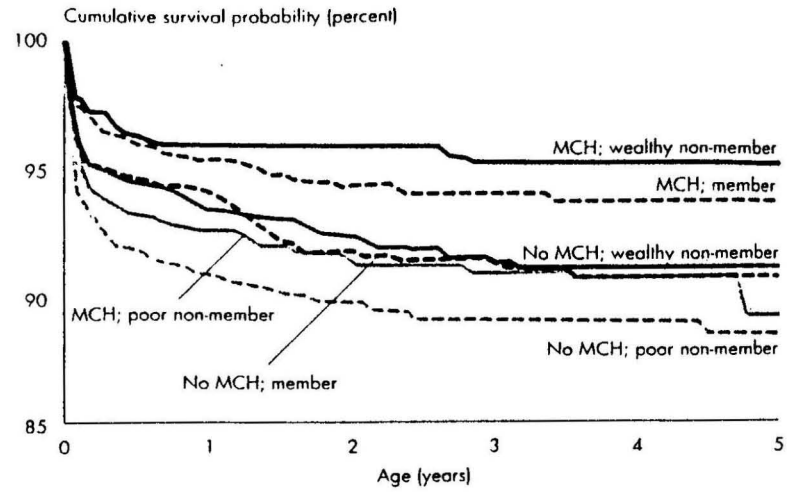
Although the 1995 data set provides insufficient numbers to determine the effect of BRAC membership on gender differentials in survival, trends indicate that male advantage, although declining, persists among BRAC member households as well as in non-BRAC member households, both poor and rich.

Figure 4 Cumulative child survival probability by household membership in BRAC's Rural Development Program in Matlab, Bangladesh, 1993–97



Source: International Centre for Diarrhoeal Disease Research Bangladesh Demographic Surveillance System data

Figure 5 Cumulative child survival probability by participation in maternal and child health (MCH) activities and household membership in BRAC's Rural Development Program in Matlab, Bangladesh, 1993–97



Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data.

The Joint Impact of Rural Development and Health Extension Activities on Socioeconomic Disparities in Child Mortality

The joint impact of membership in BRAC's Rural Development Program and intensive MCH-FP health extension activities on socioeconomic equity in health is presented in Figure 5. It appears that children from economically better-off households (rich nonmembers) in the MCH-FP area have the highest survival probability. Children from BRAC member families in the MCH-FP area have the second highest survival prospects, which exceed those of children from economically better-off families in the comparison area where only government health and development programs are available. Of concern is the marginal improvement in child survival among poor nonmembers with access to MCH-FP in contrast to the very large survival improvement of the rich with access to MCH-FP. Finally, the survival improvement of BRAC members with access to MCH-FP is far greater than that of BRAC members in the comparison area.

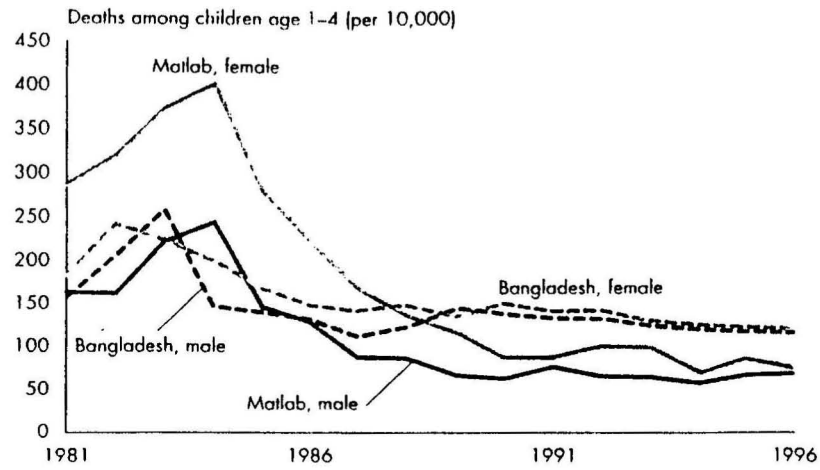
Discussion

Concomitant with the steady increase in child survival apparent since the early 1980s is a marked reduction in the gender and socioeconomic disparities in mortality that have long characterized Bangladesh. In Matlab, the gap in mortality between boys and girls has declined by 99% over the period 1982 to 1996. Even when measured against gender-specific norms, there is a greater than 90% improvement in gender equity in child mortality over the period. Although comparison of absolute levels of child mortality for boys and girls indicates that gender disparities no longer exist in 1996, when assessed against sex-specific standards a small but significant degree of female disadvantage still persists (see Fig. 1).

Socioeconomic disparities in child survival have also decreased dramatically over time. During the period 1982 to 1996, an "inverse gradient" is observed whereby interval improvements in child mortality equality are greatest among the lowest socioeconomic strata and lowest among the highest socioeconomic strata (see Table 1 and Fig. 2). A similar inverse gradient is seen when CMR trends are considered by gender and socioeconomic group: Poor girls have the greatest health gains, followed by girls in the middle-income group, with the smallest gains observed among the wealthiest (see Table 2, Fig. 3).

When considering the validity of these findings, two critical questions arise. First, are these trends in mortality among children aged 1 to 4 years indicative of more pervasive improvements in female survival chances across the life cycle? Second, can these findings be generalized beyond Matlab to the rest of Bangladesh?

Figure 6 Child mortality rate by sex in Matlab intervention area and in Bangladesh, 1981–96



Source: International Centre for Diarrhoeal Disease Research, Bangladesh, Demographic Surveillance System data; Bangladesh Bureau of Statistics.

Based on DSS data from Matlab, the examination of trends in gender differentials in mortality among infants, children aged 5 to 15 years, and adults aged 15 to 44 and over 45 years indicate that the relative gains by females are as great as or even greater than in the 1 to 4 year age group (Bhuiya and Ansary 1998). Indeed, in 1996, the 1 to 4 year age group is the only one in which female mortality continues to exceed male mortality.

The applicability of these findings to the rest of Bangladesh is indicated by the comparison of mortality trends in Matlab to national-level Sample Registration Survey data (BBS 1990). Despite the known inadequacies of national-level data, it appears that the experience of Matlab reflects broader trends in Bangladesh (see Fig. 6). Although data from both Matlab and Bangladesh as a whole indicate a marked decline in child mortality over the period 1981 to 1996, CMRs for girls in Matlab were persistently higher until 1988, when a cross-over occurred to levels below national figures. Indeed, the sharp increase in female mortality due to the shigella outbreak in 1984 makes even more apparent the survival disadvantage of girls compared with boys in this age group (Bennish and Wojtyniak 1991).

What lies behind the encouraging trends described above? One hypothesis relates to preexisting differences in the cause of death structure between socioeconomic groups. Less affected by diseases of poverty such as tuberculosis and measles, the wealthy might be expected to experience a lower rate of improvement in CMR than the poor groups benefiting from public health programs such as childhood immunization (Bourgeois-Pichat 1981). Alternatively, secular reductions in the severity of poverty may be responsible for the remarkable gain in child survival among the poorest. In either case, the role of social and economic development policies and programs appears critical to understanding gains in equity. As summarized in the conceptual framework of the social basis of health (see chapter 2), a policy-relevant understanding of the determinants of these trends must go beyond the consideration of change in social position and exposure and address the larger social-structural context in which these changes have occurred.

An examination of state development policies reveals an ongoing commitment to improving health care, reducing poverty, and increasing the status of women. Adopted in 1973, Bangladesh's Constitution enshrines women's right to equality and mandates state responsibility to help secure for its citizens the necessities of life (i.e., food, clothing, shelter, education, and medical care). Reflecting these tenets, subsequent national development plans have consistently emphasized a concern for poverty alleviation, employment generation, and women's involvement in the development process (Ahmed and Karim 1998).

In the absence of a formally adopted national policy on health, state development plans have provided the main basis for identifying strategies and priorities for health. Other policies in the areas of education, nutrition, agriculture, rural development, social welfare, and women's affairs have also been instrumental in their commitment to improving the health and well-being of

the rural poor and women in particular. Starting in 1973, initial 5 year plans focused on expanding primary health care coverage in underserved rural areas. This focus was given further impetus as Bangladesh embraced the Alma Ata declaration on Primary Health Care in 1978 and, later, UNICEF's Expanded Program on Immunization in 1985. The fourth 5 year plan (1990–1995) had as its priorities the expansion of program efforts in MCH-based family planning, immunization and communicable disease control, human resource development (paramedical training and so forth), and improvement of the physical infrastructure at tertiary and secondary levels.

The degree of success in translating policy commitments to health equity for women and the poor is more difficult to evaluate. Overall, per capita allocations to health and population sectors have increased over time, from U.S. $0.5 in 1986 to U.S. $1.25 (constant price) in 1997, although they constitute only 1.5% of the GNP (Ministry of Health and Family Welfare 1998). With the exception of family planning services, however, as much as 70% of all health-related expenditures are urban based, with a disproportionate amount allocated to secondary and tertiary health systems. Notwithstanding this urban bias, a pro-poor, or progressive, orientation to the distribution of benefits from government expenditures is apparent based on current patterns of utilization. Benefits from public health spending as a proportion of income appear highest among the poorest (2.9%), declining in an almost linear fashion to 0.2% in the upper two income deciles (Begum 1997).

Programmatic successes include the aggressive family planning program, which, proponents claim, has accounted for a rise in the use of modern contraceptive methods among currently married women aged 15 to 45 years, from 5% to 42% in the period 1975 to 1997. Its detractors argue, however, that the fiscal, political, and programmatic emphasis on family planning has inhibited the development of an integrated and effective primary health care system (Ross et al. 1996).

A rise in the national coverage rate for childhood immunizations has also occurred, from 2% in 1981 to over 60% in 1997 (Expanded Program on Immunization [EPI] 1998). Distribution systems for oral polio vaccines and supplemental vitamin A have been equally successful, reaching 80% and 90% of children under 5 years of age, respectively (Mitra et al. 1997; EPI 1998).

Contrary to these positive developments, field studies indicate that the percentage of acute illness treated in the public sector has declined from 20% in 1984 to only 12% in 1995, a trend that is independent of poverty status. Among the hard-core poor (or the lowest two income deciles), 45% seek treatment for acute illness from untrained allopathic doctors, 9% from traditional healers and homeopaths, 18% from drug shops, and only 13% from licensed medical doctors (Begum 1997). Several explanations for the underutilization of public health care services have been offered, the large majority of which are supply-related factors such as inadequate provider–client interaction, doctor absenteeism, the nonavailability of essential drugs, lack of accountability and personnel management, and limited responsiveness to client needs (Begum 1997; Perry et. al. 1998).

Another distinguishing feature of the broader sociostructural context of Bangladesh is the degree of organized collaboration between the state and nongovernmental organizations (NGOs). Currently, 80% of rural subdistricts in Bangladesh have been brought under the umbrella of NGO programs. In addition to intensive activity in the areas of poverty alleviation, female education, and microcredit, over 4000 international, national, and local NGOs work in the areas of health, nutrition, and population, many in partnership with the government. Compared with highly bureaucratized state structures, the greater flexibility and result-oriented management style of NGOs gives them a comparative advantage in terms of program innovation and delivery (Ahmed and Chowdhury 1999).

This chapter examines the impact of two such NGO-facilitated programs with a view to understanding the independent and synergistic impact of intensive health extension (MCH-FP) versus rural development activities (BRAC) on socioeconomic and gender differentials in child survival. In general, it appears that exposure to ICDDR,B's intensive MCH-FP health extension program has conferred a persistent survival advantage to children over the last 15 years (see Table 3). Curiously, however, absolute survival gains, or the rate of improvement in survival over the same 15-year period, are greatest in the comparison area, where only government health services are received (see Table 3).

Improvements in gender and socioeconomic equity are also apparent in both MCH-FP and comparison areas (see Tables 3 and 4). Although absolute levels of child mortality are higher in the comparison area, gains in gender equality are greatest in this population (see Table 3). In both the MCH-FP and comparison area, gains in child mortality are also greatest in the lowest socioeconomic group. It should be noted, however, that this equity-enhancing trend is more pronounced across socioeconomic groups in the MCH-FP area (see Table 4).

Overall, the most marked net health improvements (irrespective of area) are experienced by the poor. It

remains difficult to ascertain, however, the extent to which survival gains can be attributed to public health campaigns such as immunization coverage and the promotion of oral rehydration therapy (Chowdhury and Cash 1996) or represent the inevitable outcome of secular changes in poverty, behavior, education of mothers, and environmental exposure, among other factors.

Study findings also indicate a survival advantage associated with participation in BRAC's Rural Development Program. These results must be interpreted cautiously, however, given the possible influence of selection bias on the outcome of interest. According to this argument, although BRAC members and poor nonmembers may be of equivalent socioeconomic status according to BRAC's selection criteria, other nonmeasured attributes or prior endowments may make them distinct such that certain individuals self-select into BRAC's programs.

Although it is possible that among these predisposing factors are ones that confer a survival advantage, to disentangle them from the socioeconomic and psychosocial benefits arising from membership is far from straightforward. A number of studies that investigate the issue of selection bias have been undertaken in the context of the larger BRAC-ICDDR,B Joint Project, the results of which suggest that prior differences between groups only partially account for the beneficial effects of participation (Evans et al. 1998; Mahmud and Huda 1998; Zaman 1998). In short, it appears that participation in socioeconomic development activities has positive health and survival benefits that are real, yet remain poorly understood.

The chapter also provides evidence of the synergy between health and socioeconomic development activities in promoting child survival. Together, a greater survival advantage is attained than with either input alone (Fig. 4). Evidence of synergy also supports the argument for the multiple and complex determinants of health and the importance of a broad-based policy approach that extends beyond the health sector in efforts to improve the health of women and the poor.

An ironic consequence of the apparent benefit of intensive health and socioeconomic interventions is the lessening of socioeconomic inequities in child survival between the poor beneficiaries of these programs and the relatively better off, on the one hand, but the widening of disparities between beneficiary households and the poor who do not benefit, on the other. Clearly, further consideration of the factors that hinder participation of the poor and marginalized are urgently needed in an effort to extend the equity benefits of these programs across the socioeconomic spectrum.

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ABOUT THE EDITORS

Timothy Evans, D.Phil., M.D., is Team Director of the Health Equity Program at The Rockefeller Foundation, New York. Dr. Evans is currently a member of the Board of the Global Alliance for Vaccines and Immunizations and the Global Forum for Health Research.

Margaret Whitehead, Ph.D., is W.H. Duncan Professor of Public Health at the University of Liverpool, UK. Professor Whitehead is a regular adviser to WHO EURO on the issue of social inequalities in health, and she is currently analyzing equity issues in relation to health sector reforms around the world.

Finn Diderichsen, M.D., Ph.D., is Professor of Social Epidemiology and Health Policy Research at the Karolinska Institute, Department of Public Health Science. He is chairman of the board for public health training at Karolinska Institute and a member of the National Public Health Commission of Sweden.

Abbas Bhuiya, M.A., Ph.D., is the Head of the Social and Behavioral Sciences Program, ICDDR,B's Centre for Health and Population Research in Dhaka, Bangladesh. Dr. Bhuiya has worked extensively in the field of health and mortality, especially on issues of social, economic, and behavioral determinants.

Meg Wirth, M.P.A., manages the Global Health Equity Initiative for the Rockefeller Foundation's Health Equity Program. Her previous public health work includes maternal survival in Indonesia and the founding of a health outreach program in the Appalachian region of the United States.

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