

Chapter 10

Gender Differentials in Health



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In health, more than in other social sectors, sex (biological) and gender (behavioral and social) variables are acknowledged useful parameters for research and action because biological differences between the sexes determine male-specific and female-specific diseases and because behavioral differences between the genders assign a critical role to women in relation to family health. Until recently, however, the importance of sex and gender informed work on female-specific diseases but did not carry over to diseases shared by men and women. As a result, the literature contained comparatively little about which diseases affect men and women differently, why that difference might be the case, and how to structure prevention and treatment in response to these differences. This situation has changed, however, and interest in measuring, understanding, and responding to sex and gender differentials in disease has surged, nurtured by breakthroughs in science and advances in advocacy.¹

In line with this interest and using global burden-of-disease data for 2001, this chapter reviews worldwide gender differentials in mortality and morbidity that result in excess disease burdens for women and examines cost-effective interventions drawn from chapters 17 (on sexually transmitted infections), 26 (on maternal and perinatal conditions), 29 (on health service interventions for cancer control in developing countries), 31 (on mental disorders), 32 (on neurological disorders), 51 (on musculoskeletal disability and rehabilitation), and 57 (on contraception) to address them.

The focus on women's excess disease burden is justified to fill gaps in knowledge regarding women's health that are in part a product of male bias and male norms in clinical studies. In the past, medical research often wrongly assumed that women were biologically weaker (male bias) and extrapolated findings

from trials with male subjects only (male norm) to both sexes, whereas female biology can affect the onset and progression of disease, and women's lower position in society can affect their health-seeking behaviors (Pinn 2003; Sen, George, and Ostlin 2002).

As A. K. Sen (1990) and others have indicated, gender bias results in the neglect of female children and in selective abortion and excess female mortality in China, India, and other South Asian countries, explaining the "missing" women in population counts. In addition, such bias can have intergenerational health effects, starting with maternal undernutrition and leading to fetal growth retardation, low birthweight, child undernutrition, and ailments in adult children of disadvantaged mothers (Osmania and Sen 2003).

This chapter only partially addresses women's health needs. It omits important disease conditions for women, such as lung cancer and HIV/AIDS, where men and women currently have similar disease burdens. (In the case of HIV/AIDS this balance is changing, and women's disease burden is rising over men's, especially for the 18–25 age group and for specific world regions.) It also does not cover important sources of the disease burden for women that are not measured in disability-adjusted life years (DALYs), such as burden from female genital mutilation (FGM). Last, the emphasis on disease underplays women's reproductive and other health needs.

ANTECEDENTS

The chapter's emphasis on gender differentials and inequalities in health rather than on women's absolute health conditions reflects the evolution of thinking on women and health issues.

(Annex 10.A charts these advances in the past two decades, highlighting milestones and influential publications.) In the 1960s and 1970s, the field of international women's health issues emerged from and was influenced by an interest in women's fertility behavior as a means of curbing population growth and by an interest in maternal and child health to improve child welfare, with little or no attention paid to mothers (McNamara 1981; Rosenfield and Maine 1985). Much of the work in the 1980s sought to bring a woman-centered perspective into population and maternal and child health programs. This focus included awareness of how women's lower status in society affected health delivery and health-seeking behaviors and how women's time burdens in poor households affected child health. The issues raised included the quality of care in health and family-planning programs and the nature of women's work and its impact on child survival and health (Bruce 1990; Leslie 1988). Reducing maternal mortality became a major development objective (Herz and Measham 1987).

The 1994 United Nations International Conference on Population and Development in Cairo placed women's reproductive health and rights at the center of the population and development debate, and the United Nations Women's Conference in Beijing the following year reinforced the importance of women's empowerment and of a gender perspective in health. Along with the global burden-of-disease effort, researchers estimated the loss of women's healthy years of life caused by gender violence (Heise, Pitanguy, and Germain 1994), and gender was identified as central to women's risk of and treatment for HIV/AIDS (Gupta 2000; Mann 1993). The World Health Organization analyzed how differences between women and men in access to and control over resources determine differential exposure to risk and access to the benefits of health technology and care (WHO 1998). After more than two decades almost solely devoted to maternal and reproductive health issues, attention expanded to cover a range of women's health issues unrelated to reproduction and to identify and correct gender differentials and inequities in health (Sen, George, and Ostlin 2002). These new emphases complemented renewed interest in health inequities and their reduction in the field of international health (see, for instance, Evans and others 2001).

Framework

Both sex and gender matter in health. We use the term *sex* to describe differences between men and women that are primarily biological in origin and that may be genetic or phenotypic. By contrast, we use the term *gender* to describe differences that are primarily caused by social conditions or cultural and religious beliefs and norms regarding the sexes. Structural gender inequalities that place women in a subordinate position to men underlie and contribute to gender differentials in disease (Sen, George, and Ostlin 2002). A gender perspective addresses dif-

ferences between men's health and women's health that arise from this lower position and the consequent unequal power relationship between the sexes. Sex and gender can act alone, independently, or interactively in determining differentials in the burden of disease (Krieger 2003). Some women's excess health burdens, such as uterine cancer, are based almost solely on biology. At the other end of the continuum, some women's excess health burdens, such as injuries from domestic fires or domestic abuse, are solely gender based.

However, in most cases sex and gender interact to determine women's disease burdens. Two salient examples are depressive disorders and HIV/AIDS. Women are twice as likely as men to become depressed, and genetics and hormones influence the risk of depression. However, genes and sex hormones cannot entirely explain women's excess burdens, and gender factors play an important role (WHO 2000). HIV infection rates among teenage girls are 5 to 16 times higher than among teenage boys in Sub-Saharan Africa. This earlier age of HIV exposure for girls is partly explained by the greater biological efficiency of male-to-female transmission and partly by girls' lack of knowledge, opportunities, and bargaining power in sexual relations that make them prime victims of the rapid spread of the disease.

Existing knowledge about the interplay between sex and gender in determining disease is imperfect and evolving (Krieger 2003; Pinn 2003). This chapter groups women's excess health burdens from diseases into the following four broad categories:

- diseases specific to women (that is, where biology plays a major role in the disease)
- diseases related to women's average greater longevity (where both sex and gender tend to play important roles)
- diseases that result from the interaction of sex and gender
- diseases that are predominantly gender based (that is, that result from specific behavioral, social, and cultural factors associated with women's condition).

Sex and gender have a much wider influence on disease than is usually acknowledged. They influence the etiology, diagnosis, progression, prevention, treatment, and health outcomes of disease as well as health-seeking behaviors and exposure to risk. Whereas sex plays a bigger role in the etiology, onset, and progression of disease, gender and its consequences influence differential risks, symptom recognition, severity of disease, access to and quality of care, and compliance with care. In addition, poverty and social exclusion because of race and ethnicity interact with sex and gender and contribute to women's excess disease burdens in ways that are largely unexplored to date (Breen 2002).

Factors that influence gender differentials in relation to the risk of disease include (a) biological (genetic, physiological, and

hormonal) differences between the sexes; (b) women's longer life expectancy; (c) nature and rate of change of women's labor force participation compared with men's participation; (d) women's differential access to social protection mechanisms (health and social insurance); (e) cultural norms, religious beliefs, and family arrangements and behaviors determining gender roles and gender hierarchy in society; (f) gender differences in educational attainment; (g) income differences between the genders resulting from the interaction of all the previous factors; and (h) interactions between race, ethnicity, income, and gender.

Women's overall underutilization of health services has been well documented. For instance, even though women in India report more illness than men, hospital records show that men receive more treatment (World Bank 1996); in Thailand, men are six times more likely than women to seek clinical treatment for malaria, a disease that affects women and men similarly (Hanson 2002); and in Brazil, the Dominican Republic, Jamaica, Paraguay, and Peru, low-income women underuse health services (Levine, Glassman, and Schneidman 2001).

Three groups of factors influence this underuse of health services. The first group is service factors, such as accessibility; affordability (money and time costs); and appropriateness or adequacy, including friendliness, of the health and social infrastructure for meeting women's needs. The second group is user factors, which include social constraints, such as restrictions on women's mobility and women's average lower incomes and greater time burdens than men's; asymmetric information about health needs and rights and the availability of services, which disproportionately affects poor women; and marital status, family roles, and work conditions affecting access and use. The third group is institutional factors, including men's decision-making power and control over health budgets and facilities, which affect local perceptions of illness and norms concerning treatment, and stigmatization and discrimination in health settings, which affect women among the poor and women of minority ethnic and racial groups.

Context

The global demographic dynamic, a product of the interplay of nature and nurture, biology and society, helps determine gender differentials in health. In 2001, the world's population, an estimated 6.2 billion, was 50.3 percent male and 49.7 percent female. The surplus male population was concentrated in the developing countries, whereas the developed countries had a higher proportion of women, primarily in the older age groups (WHO 2001).

In the developed countries, the number of women age 80 and older was more than double the number of men in the same age group. This female advantage in longevity helps shape a gender paradox in health outcomes worldwide: on average,

males live shorter but healthier lives than females. Even though more boys are born than girls, gender differences in mortality eventually change the sex balance in populations so that by age 30 or so women start outliving men, and the absolute female advantage in survivability increases with age (Kinsella and Gist 1998). Therefore, differences in life expectancy at birth by gender, using 2000 data, vary in favor of females, ranging from one year in the low-income countries of South Asia and Sub-Saharan Africa to seven years in Europe and Central Asia and nine years in the middle-income countries of Latin America and the Caribbean.

Overall, however, women have higher morbidity than men. Murray and Evans (2003) find that in relation to expected lost healthy years at birth, whereas men lose 7.8 years over their lifetimes as a result of poor health, women lose 10.2 years. In other words, women spend about 15 percent of their lives in unhealthy conditions and men spend just 12 percent. Therefore, living longer lives should not be taken to indicate better health for women. Women live less healthy lives and are saddled with higher morbidity in part because they outlive men (Verbrugge 1989). Supporting the less healthy lives assertion, women up to age 65 reported worse health status in virtually all 64 household surveys from 46 countries (Sadana and others 2000). Because of these differences in morbidity, the concept of healthy adjusted life expectancy at birth describes differences in health conditions between males and females better than the concept of life expectancy at birth.

GENDER DIFFERENTIALS IN DISEASE BURDENS

The global burden of disease for 2001 proportionally affects males slightly more than females. About 52 percent of DALY losses are attributed to males, but this proportion varies between 54.8 percent in Europe and Central Asia and 49.9 percent in South Asia. The only region where the global burden of disease affects females more than males is South Asia.

Table 10.1 shows the burden of disease by region, gender, and age group. The burden of disease during early childhood (age 0 through 4) is somewhat smaller for girls than boys; however, from age 5 through 29, females lose more DALYs than males, but only in developing countries. Larger differences favoring women appear starting at age 30 and continue until after the age of 70, when women, because of their greater longevity, lose more DALYs than men. However, when DALYs are estimated per 1,000 males and females as in table 10.1, women in the older age groups lose fewer DALYs than men both in low- and middle-income countries (LMICs) and in high-income countries (HICs).

Communicable diseases and maternal conditions contribute significantly to females' burden of disease in developing countries and add little to their burden in HICs, where

Table 10.1 DALYs by Region, Gender, and Age Group, 2001
(DALYs per 1,000 population)

Region	Age (years)								Total
	0–4	5–14	15–29	30–44	45–59	60–69	70–79	80+	
<i>Males</i>									
Low- and middle-income countries	754.6	75.4	137.4	194.5	349.3	600.1	799.4	950.8	271.5
East Asia and the Pacific	408.0	46.5	99.6	124.2	276.4	522.8	735.3	965.1	192.6
Europe and Central Asia	345.4	50.1	137.9	220.8	412.8	695.6	855.3	952.5	278.3
Latin America and the Caribbean	449.1	56.7	155.0	173.2	290.4	493.2	682.6	870.8	217.8
Middle East and North Africa	585.6	67.5	109.3	151.4	337.8	608.5	825.8	1,019.8	219.8
South Asia	805.2	83.0	131.9	196.0	383.0	661.7	861.7	899.6	285.1
Sub-Saharan Africa	1,480.7	142.2	248.2	532.2	609.0	778.6	1,002.5	1,194.3	528.6
High-income countries	128.2	28.6	84.4	97.0	189.6	355.7	541.5	721.5	168.2
World	698.5	70.9	131.1	178.5	315.4	540.4	721.0	856.7	256.3
<i>Females</i>									
Low- and middle-income countries	753.4	78.5	142.5	162.1	275.3	501.3	745.4	946.7	259.8
East Asia and the Pacific	434.9	47.1	86.2	103.4	225.7	442.9	699.5	966.8	182.1
Europe and Central Asia	303.6	39.1	87.0	117.7	223.6	423.7	663.2	909.6	212.5
Latin America and the Caribbean	395.8	51.1	101.8	120.5	222.3	423.8	604.9	827.6	179.0
Middle East and North Africa	538.0	62.7	103.6	140.6	278.3	509.2	767.6	1,069.1	203.3
South Asia	865.5	98.3	168.7	188.5	334.0	616.6	901.0	938.3	304.4
Sub-Saharan Africa	1,367.4	138.7	317.3	448.9	478.8	701.4	1,009.8	1,196.5	504.3
High-income countries	117.5	28.9	72.5	77.7	144.8	258.4	414.6	625.9	153.3
World	696.5	73.7	134.2	148.1	247.2	441.6	641.0	800.0	243.4

Source: WHO 2001.

noncommunicable diseases prevail in both women's and men's disease burden. Injuries weigh more heavily in males' than in females' burden of disease across regions. In summary, in both developed and developing countries, the overall burden of disease is higher for males than for females; however, this situation reverses in developing countries for young girls and women in their prime childbearing years. In addition, in LMICs, females are more affected than males by highly preventable communicable diseases.

WOMEN'S EXCESS DISEASE BURDENS

The 2001 global burden-of-disease data underestimate both women's and men's disease burdens because of the incompleteness of health statistics, especially in the developing world. This underestimation is probably more pronounced for women because they experience more disability—which is less well recorded than mortality—than men. This underestimation is aggravated by underreporting resulting from the stigma associated with certain diseases in women, such as sexual infections;

the prevalence of asymptomatic illness, such as sexually transmitted infections among women; the differences in health-seeking behaviors that favor males accessing formal health care, which is the main source for health statistics; and the exclusion of some conditions that affect only women, such as FGM, from global burden-of-disease estimations (Hanson 2002). Thus, the findings in the preceding section may be affected by a quality problem, and the estimates in this section are probably conservative.

Table 10.2 breaks down 11 conditions specific to women by region. In 2001, conditions specific to women accounted for 5.3 percent of women's total DALY losses, compared with 0.7 percent for two conditions (prostate cancer and benign prostate hypertrophy) specific to men.² Most causes of mortality or morbidity specific to women are related to maternal conditions and malignant neoplasms. The DALY losses associated with conditions specific to women are around 6 percent in both HICs and LMICs, but maternal conditions are more prevalent in LMICs, whereas neoplasms cause more DALY losses in HICs.

Table 10.2 Percentage of DALYs Resulting from Conditions Specific to Women by Region, 2001

Condition	HICs	LMICs	East Asia and the Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa	World
Maternal	0.5	4.0	2.0	0.8	2.5	4.1	4.9	5.7	2.8
Maternal hemorrhage	0.0	0.6	0.2	0.0	0.2	0.4	0.8	1.0	0.5
Maternal sepsis	0.1	0.8	0.5	0.2	0.7	0.7	0.9	1.1	0.7
Hypertensive disorders ^a	0.0	0.3	0.1	0.0	0.2	0.2	0.4	0.5	0.3
Obstructed labor	0.0	0.4	0.1	0.0	0.1	0.3	0.6	0.5	0.3
Abortion	0.0	0.5	0.1	0.0	0.2	0.5	0.7	0.9	0.5
Other	0.4	1.4	1.0	0.6	1.3	2.0	1.5	1.7	0.5
Neoplasms	5.5	1.7	1.8	4.1	3.1	1.4	1.5	0.8	2.2
Breast cancer ^b	3.4	0.8	1.0	2.0	1.3	0.9	0.6	0.3	1.1
Cervix uteri cancer	0.4	0.6	0.5	0.7	1.0	0.3	0.7	0.4	0.6
Corpus uteri cancer	0.8	0.1	0.1	0.7	0.5	0.1	0.0	0.0	0.2
Ovarian cancer	0.9	0.2	0.3	0.7	0.3	0.1	0.2	0.1	0.3
Chlamydia ^b	0.1	0.3	0.2	0.2	0.4	0.5	0.4	0.3	0.3
Total	6.1	6.0	4.0	5.1	6.0	6.0	6.8	6.8	5.3

Source: WHO 2001.

a. Related to maternal conditions only.

b. Even though these conditions are not specific to women, women account for more than 90 percent of the DALY losses associated with these conditions.

Table 10.3 shows the gender ratio and burden of disease of eight conditions, by region, that are more prevalent among women than among men. The selection of diseases was done using as the threshold the mean plus one standard deviation (SD) of the distribution of gender ratio scores for each disease. The diseases selected were then screened for their importance in women's disease burden, using the same criterion of the mean plus one SD in the distribution of DALY scores for women. Although some diseases, such as unipolar depressive disorders and osteoarthritis, are priorities for both HICs and LMICs, others, such as Alzheimer's disease, are more relevant in HICs, reflecting women's longer life expectancy. Conditions such as age-related vision disorders, migraine, fires, and cerebrovascular diseases have particular relevance in specific regions.

Combining gender-specific conditions and shared conditions that disproportionately affect women gives a total of 19 priority conditions for women. Taken together, these conditions represent about one-fifth of women's total DALY losses and indicate priorities for research and the search for cost-effective methods of promotion, prevention, and treatment. Note that some important contributors to females' health burdens, such as malaria and HIV/AIDS, have been omitted because females do not currently suffer disproportionately from these diseases. However, the growing feminization of the HIV/AIDS epidemic in developing countries should result in excess disease burdens for women in the near future.

We determined priority conditions affecting females in different age groups using a method that took into account both the gender ratio and the weight of specific conditions in females' total DALYs lost. The results indicate that women are affected by communicable diseases and maternal conditions until age 29 and by noncommunicable diseases after age 30, with chronic diseases having a heavy weight during the last stages of the life cycle. Conditions for which females' burden of disease is more or less double that of males at a specific stage in the life cycle are migraine at age 5 to 14, fires and panic disorder at age 15 to 29, and unipolar depressive disorders at age 60 to 69.

PRIORITY DISEASE GROUPS FOR WOMEN

Table 10.4 presents conditions with excess burdens for women divided into the four groups defined earlier.

Conditions Specific to Women

In developed countries, advances in medical technology have almost eliminated the burden of disease resulting from maternal conditions. Three types of cost-effective intervention packages for maternal conditions are the prevention of pregnancy by means of effective family-planning methods; the prevention of complications (for example, hemorrhage); and the prevention

Table 10.3 Gender Ratio and Women's Excess Burden of Disease for Top Priority Conditions by Region, 2001

Condition	World		LMICs		HICs		East Asia and the Pacific		Europe and Central Asia		Latin American and the Caribbean		Middle East and North Africa		South Asia		Sub-Saharan Africa	
	GR	BOD (percent)	GR	BOD (percent)	GR	BOD (percent)	GR	BOD (percent)	GR	BOD (percent)	GR	BOD (percent)	GR	BOD (percent)	GR	BOD (percent)	GR	BOD (percent)
Alzheimer's disease and other dementias	1.81	1.48	n.a.	n.a.	2.13	7.02	1.55	1.51	2.40	2.16	1.63	1.58	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Osteoarthritis	1.64	1.46	1.63	1.26	1.71	3.30	1.64	2.15	1.76	2.76	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Unipolar depressive disorders	1.53	4.22	1.51	3.89	1.69	7.30	n.a.	n.a.	1.73	5.15	1.72	6.94	1.44	3.86	1.56	4.33	1.54	1.17
Age-related vision disorders	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.63	2.10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Migraine	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.81	1.14	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other cardiovascular diseases	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.45	3.20	n.a.	n.a.	n.a.	n.a.
Fires	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.43	2.04	n.a.	n.a.
Cerebrovascular diseases	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.47	1.80

Source: WHO 2001.

n.a. = not applicable; BOD = burden of disease; GR = gender ratio.

Note: The gender ratio is the ratio of female to male DALYs.

For each world region or classification, data are shown only for those diseases that are classified as "priority" given that they meet the selection criteria according to the methodology used in this study (that is, the gender ratio was equal to or higher than the mean plus one SD of the distribution of gender ratio scores, and in a second screening, the BOD was equal to or higher than the mean plus one SD of the distribution of female DALY scores).

Table 10.4 Priority Conditions by Category, 2001

Category and condition	Gender ratio	Region where gender ratio is apparent
<i>Conditions specific to women</i>		
Maternal hemorrhage	n.a.	n.a.
Maternal sepsis	n.a.	n.a.
Hypertensive disorders related to maternal conditions	n.a.	n.a.
Obstructed labor	n.a.	n.a.
Abortion	n.a.	n.a.
Other maternal conditions	n.a.	n.a.
Breast cancer	244.62	World
Cervix uteri cancer	n.a.	n.a.
Corpus uteri cancer	n.a.	n.a.
Ovarian cancer	n.a.	n.a.
Chlamydia	9.76	World
<i>Conditions associated with women's greater longevity</i>		
Alzheimer's disease and other dementias	1.81	World
Osteoarthritis	1.64	World
Cerebrovascular diseases	1.47	Sub-Saharan Africa
Other cardiovascular diseases	1.45	Middle East and North Africa
Age-related vision disorders	1.63	Europe and Central Asia
<i>Conditions arising from the interaction of sex and gender</i>		
Unipolar depressive disorders	1.53	World
Migraine	2.81	Latin America and the Caribbean
<i>Gender-based conditions</i>		
Fires	2.43	South Asia

Source: WHO 2001.
n.a. = not applicable.

of death or disability resulting from complications through emergency obstetric care. Proven technologies also exist for screening and early detection of some neoplasms, although their implementation has been uneven. Problems pertaining to conditions in this category are not simply related to the availability of medical technologies, but also to the behavioral and social factors that influence women's exposure to risks and underuse of services as well as the economic and institutional factors that influence the availability and quality of services, especially in developing countries.

Even though the international women's health movement has promoted significant advances in the quality of care for reproductive health and maternal conditions in the past 25 years, the main challenges in relation to conditions specific

to women include reaching poor and socially excluded women with basic maternal and reproductive health services; strengthening the adoption of preventive health behaviors in developing countries; extending the quality of care to other conditions specific to women, including neoplasms; and educating and empowering women to promote their own healthy behaviors.

Conditions Associated with Women's Greater Longevity

The main group of diseases with excess burdens for women associated with women's greater longevity are Alzheimer's disease; musculoskeletal disorders, such as osteoarthritis, rheumatoid arthritis, and osteoporosis; and cardiovascular diseases,³ which together account for 12 percent of total DALY losses for women worldwide. LMICs account for about 80 percent of the DALYs resulting from these conditions, likely because of the lack of medical care during the early stages of these diseases.

Alzheimer's disease and other dementias account for 1.5 percent of total female DALYs, and this burden is almost twice as high as that for men. About 46 percent of this burden is concentrated in HICs and 54 percent in LMICs, but DALYs lost per capita are much greater in the HICs than in more densely populated LMICs. Because of population aging, during the next 50 years the number of people with Alzheimer's disease is expected to more than double, with more women affected than men (McCann and others 1997). Studies of the effects of estrogen therapy on Alzheimer's disease have been inconsistent: estrogen may increase the risk of both dementia and other diseases such as stroke in postmenopausal women (Shumaker and others 2003).

As concerns musculoskeletal disorders, osteoarthritis affects 9.6 percent of men and 18.0 percent of women age 60 or older worldwide and accounts for 1.5 percent of total female DALYs. Osteoarthritis is related to aging and is most common in overweight women over the age of 45. Demographic changes in developing countries, especially middle-income countries, indicate that osteoarthritis prevention and treatment needs will increase during the next decade. Most prevention and treatment are linked to regular exercise, healthy weight management, physical and occupational therapy, and pain management with over-the-counter medications.

Because cardiovascular diseases are generally thought of by society as "men's diseases," women tend to delay seeking treatment for cardiac-related events (Seils, Friedman, and Schulman 2001). However, cardiovascular and cerebrovascular diseases account for about 8.2 percent of total female DALYs, more than half of which is caused by cerebrovascular diseases.

In addition to age, smoking, and obesity, another risk factor that exposes women to a greater burden of cardiovascular

diseases is depression, which is associated with increased morbidity and mortality from heart diseases and is highly prevalent in women (Linfañte and others 2003). Also, women's symptoms of heart disease tend to be different from men's, increasing the difficulties of diagnosis (Seils, Friedman, and Schulman 2001). Finally, evidence suggests that physical activity significantly reduces the risk of cardiovascular events; however, women tend to exercise less than men (Manson and others 2002). Whether this observation can be generalized to all age groups and whether it occurs because of biological factors or social norms deserve further attention.

Conditions Arising from the Interaction of Sex and Gender

In the group of conditions resulting from the interaction of biological and social factors, unipolar depressive disorders have the most significant gender ratio and most unequal burden of disease in every region except East Asia and the Pacific. Unipolar depressive disorders account for 4.2 percent of women's global burden of disease. Even though the DALYs lost per capita are similar in LMICs and HICs, these disorders represent a higher share of women's total burden of disease in HICs (7.3 percent) than in LMICs (3.9 percent). Another important consideration is the high comorbidity between depression and other psychiatric disorders (for example, anxiety disorders). Neuropsychiatric disorders account for 11.8 percent of women's total global burden of disease and 23.5 percent in HICs.

The exact contributions of biology and society in the etiology of depression are unknown. Some believe that genetic causes account for about half of the risk for mood disorders (Zubenko and others 2002), whereas others suggest that gender roles, stressors, social relationships, and personality traits may play a larger role than hormones and neurotransmitters (Bromberger 2004). As concerns biology, aside from genetic predisposition, the fluctuation of sex hormones, especially estrogen, during women's reproductive life is believed to be an important risk factor for depression (Bromberger 2004). As concerns social factors, poverty; lack of proper nutrition and education; stressful and insecure life circumstances; and domestic and sexual violence and the concomitant feelings of loss, entrapment, and lack of control are likely at the root of depression (Bromberger 2004; WHO 2000).

Treatment for depression includes medication and psychotherapy or counseling, and instruments are available to assess the severity of depression, including prenatal and postpartum depression. In developing countries, severe depression and anxiety disorders go mostly untreated (76 to 85 percent of serious cases receive no treatment), partly because of ignorance, social barriers, and stigmatization, which may affect women's access to treatment (WHO 2004). A main challenge, therefore, is increasing women's access to treatment for

depression in developing countries by creating systems that help them overcome social stigma and economic and social barriers.

In addition to treatment, prevention of depression and other mental illness needs to address women's role in society and the control they have over their lives and circumstances. According to the World Health Organization, pertinent factors are related to having sufficient autonomy to exercise some control in response to severe events, access to adequate resources to be able to make choices, and social supports (WHO 2000). The promotion of healthy behaviors, including exercise, is also crucial for prevention.

Gender-Based Conditions

The main characteristic of gender-based conditions is that they have no biological referent and can, therefore, be prevented by means of behavioral change. The role of social components in this category explains excessive health burdens for women in particular world regions. For example, women are disproportionately affected by fires in South Asia, an outcome of the violence caused by dowries. Too often women die in what are called "cooking fire accidents," whereas in reality they are murdered so that their husbands may remarry and obtain another dowry.

Another characteristic of the diseases and injuries in this category is that they are often underreported because of stigma and social pressures. As a result, the data probably underreport the true extent of the problem. FGM and domestic violence are two examples. In 2000, estimates indicated that 100 million to 140 million girls and women had undergone FGM and that more than 2 million girls were at risk. At least 28 African and Middle Eastern countries practice FGM for social, cultural, or religious reasons (WHO 2000). Unfortunately, global burden-of-disease data do not report the resulting DALYs lost. Regarding violence against women, 10 to 50 percent of women report having been physically abused by an intimate partner, and 12 to 25 percent report attempted or completed forced sex. Although men experience more absolute DALY losses from violence, women are also seriously affected. In 1998, interpersonal violence was the 10th-leading cause of death for women age 15 to 44 worldwide.

Given the complexity of these health problems, comprehensive interventions are necessary. Changes are needed in the following areas:

- legislation and law enforcement
- public policies and programs in areas such as health, education, and police and legal services
- training of service providers and creation of gender-sensitive services, especially at the community level

- education of the general public to create awareness, behavioral change, and promotion of advocacy groups
- better data collection, research, and understanding of the individual and social mechanisms sustaining these problems.

COST-EFFECTIVENESS OF INTERVENTIONS

This section summarizes the costs and health benefits of strategies to address conditions that are specific to women and conditions that affect women disproportionately. Table 10.5 presents cost-effectiveness estimates for recognized effective interventions.

Conditions Specific to Women

Conditions specific to women include the cluster of diseases related to women's maternal function plus chlamydia (which is predominantly but not exclusively a female disease) and female-specific cancers.

Maternal Conditions. The analysis developed in chapter 26 uses a model for maternal and perinatal conditions that generates 128 potential scenarios. According to the findings of this theoretical exercise, the cost per DALY averted of mother and baby packages could vary from US\$77 to US\$151 in Sub-Saharan Africa and from US\$143 to US\$278 in South Asia, depending on the complexity of the intervention.

Prenatal care prevents almost a quarter of maternal deaths, especially when backed by essential and emergency obstetric care to deal with conditions detected during the course of pregnancy care. Good prenatal care includes information, education, and communication activities and behavior-change communication to increase women's skills in relation to the identification of danger signs and potential complications and where to seek care in these cases (Dayaratna and others 2000). In Uganda, for example, integral prenatal care ranged from US\$2.26 (public services) to US\$6.43 (religious mission services) per pregnant woman per year (Levin and others 1999).

Another important service is supplementation with iron and folic acid. Iron deficiency accounts for 1.8 percent of women's deaths and 2.6 percent of female DALY losses. Iron and folic acid supplements administered to highly anemic pregnant women can save lives at a cost of US\$13 per DALY averted (Berman and others 1991), demonstrating that this intervention is very cost-effective.

Good maternal health services can strengthen the entire health system. A health facility that is equipped to provide essential obstetric care can also treat accidents, trauma, and other medical emergencies. The costs of emergency obstetric care vary depending on the country. In Uganda, costs per

episode vary from US\$73 (public hospital) to US\$86 (mission hospital) (Levin and others 1999). In Bolivia, the cost of a cesarean section ranges from US\$56 to US\$104 (Rosenthal and Percy 1991), and the cost of a normal delivery varies from US\$11 to US\$16 (Dmytraczenko and others 1998).

In developing countries, 61 percent of maternal deaths occur 23 to 48 hours after delivery because of such problems as postpartum hemorrhage and hypertensive disorders or after 48 hours because of sepsis. Complications from unsafe abortions account for 13 percent of maternal deaths, though this figure is probably an underestimate because of the scarcity of data. Little information is available on costs related to postnatal care given the different kind of interventions and the severity of cases, but the literature generally agrees that emergency obstetric care can reduce costs. As concerns postabortion care, costs per case in LMICs could vary from US\$4.40 to US\$17.19 (Dayaratna and others 2000).

Millions of premature deaths, illnesses, and injuries could be avoided by helping women prevent unwanted pregnancies and obtain prompt treatment for reproductive health problems. The contraception costs per couple-year of protection could vary, depending on the method used, from US\$6 (intrauterine device) to US\$20 (condoms or injections) (Dayaratna and others 2000). A 1999 experiment by the Planned Parenthood Association of South Africa considered total health planning costs per couple-year of protection, including travel expenses to health clinics. Comparing these costs with total health planning costs in services provided by community-based doctors, the study found that the former cost US\$44 per couple-year of protection and the latter cost US\$42.

Chlamydia. Although not specific to women, chlamydia is nine times more prevalent among women than among men, and its consequences and treatment are much more complicated and severe for women, affecting women's and infants' health during pregnancy and the postnatal period. Chlamydia is widespread in low-income countries. Chlamydia, as well as other sexually transmitted diseases, could be prevented by using condoms, with an average cost per DALY averted in developing countries estimated at US\$3.40 in noncore target groups and US\$12.60 in core target groups (Mumford and others 1998). Detecting chlamydia in pregnant women could cost \$4.38 per case, with treatment, at \$3.82 per case, being less expensive than detection (Shultz, Schulte and Berman 1992). Chlamydia's adverse effects are trachoma (chronic conjunctivitis, endemic in Africa and Asia), reproductive tract infections, genital ulcer disease in tropical countries, and infertility. The cost of each adverse outcome averted varies from about US\$85 to US\$308 (Shultz, Schulte, and Berman 1992).

Neoplasms. Cancers specific to women are responsible for high levels of female morbidity and mortality, with cervical

Table 10.5 Cost-Effectiveness of Selected Interventions Aimed at Conditions Specific to Women or That Affect Women Disproportionately

Intervention	Region or country	Lower end of range	Upper end of range	Source
<i>Maternal conditions</i>				
Mother and baby package	LMICs	US\$2 per capita	US\$4 per capita	WHO 1997
Mother and baby package	LMICs	US\$18 per DALY averted	US\$58 per DALY averted	Raviez, Griffin, and Follmer 1995; World Bank 1993
Mother and baby package	Sub-Saharan Africa	US\$77 per DALY averted	US\$151 per DALY averted	Chapter 26 of this publication
Mother and baby package	South Asia	US\$143 per DALY averted	US\$278 per DALY averted	Chapter 26 of this publication
Integral prenatal care	Uganda	US\$2.26 per pregnant woman	US\$6.43 per pregnant woman	Levin and others 1999
Iron and folic acid nutritional supplementation	Low-income countries	US\$13 per DALY averted in highly anemic pregnant women	n.a.	Berman and others 1991
Emergency obstetric care	Uganda	US\$73 per episode	US\$86 per episode	Levin and others 1999
Cesarean delivery	Bolivia	US\$56 per case	US\$104 per case	Rosenthal and Percy 1991
Normal delivery	Bolivia	US\$11 per case	US\$16 per case	Dmytraczenko and others 1998
Postabortion care (dilation and curettage)	LMICs	US\$4.40 per case	US\$17.19 per case	Dayaratna and others 2000
Total health-planning costs	South Africa	US\$42 per couple-year of protection	US\$44 per couple-year of protection	Dayaratna and others 2000
<i>Chlamydia</i>				
Prevention	Developing countries, 1990	US\$47.98 per DALY averted (noncore target groups)	US\$651.82 per DALY averted (core target groups)	Over and Piot 1993
Prevention (use of condoms)	Developing countries,	US\$3.40 per DALY averted (noncore target groups)	US\$12.60 per DALY averted (core target groups)	Mumford and others 1998
Detection	Various sites, 1992	US\$4.38 per pregnant woman	n.a.	Shultz, Schulte, and Berman 1992
Treatment	Various sites, 1992	US\$3.82 per pregnant woman	n.a.	Shultz, Schulte, and Berman 1992
Detection and treatment	Various sites, 1992	US\$84.92 per adverse outcome averted in low-prevalence context (5 percent)	US\$307.88 per adverse outcome averted in high-prevalence context (20 percent)	Shultz, Schulte, and Berman 1992
<i>Neoplasms</i>				
Detection of cervical cancer	Ecuador, 1996	US\$2.95 per visit	US\$3.51 per visit (laboratory costs)	Mumford and others 1998
	Honduras, 1991	US\$5.60 per visit	US\$12.89 per visit	Mumford and others 1998
	Zimbabwe, 1995	US\$2.99 per visit	US\$3.89 per visit	Mumford and others 1998
Cervical cytology screening	Vietnam, 2000	US\$725 per discounted DALY averted	n.a.	Suba and others 2001
Cervical cytology screening	South Africa, 2000	US\$39 per DALY averted	US\$81 per DALY averted	Goldie and others 2001
Treatment of cervical cancer	Zimbabwe, 1994	US\$12.35 per visit	US\$95.82 per visit	Mitchell, Littlefield, and Gutter 1997
	Mexico, 1994	US\$52.51 per visit	US\$432.42 per visit	
Treatment of cervical cancer	Developed countries	US\$2,384 to US\$28,770 per DALY averted based on actual survival	n.a.	Rose and Lappas 2000
Treatment of cervical cancer	Developed countries	US\$308 to US\$3,712 per DALY averted based on estimated survival	n.a.	Rose and Lappas 2000
Treatment of ovarian cancer	Thailand, 1995	US\$234.25 per case	US\$472.27 per case	Tintara and Leetanapon 1995
Management of breast cancer	Brazil, 1995	US\$1,667.88 per case	n.a.	Arredondo, Lockett, and Icaza 1995

Table 10.5 Continued

Intervention	Region or country	Lower end of range	Upper end of range	Source
<i>Alzheimer's disease and other dementias</i>				
Acetylcholinesterase inhibitors	Developed countries	US\$13 per hour of caregiver time saved	n.a.	Marin and others 2003
	Developing countries	US\$10 per hour of caregiver time saved	n.a.	Marin and others 2003
<i>Osteoarthritis</i>				
Celecoxib monotherapy	Sweden	US\$1,394 per QALY	n.a.	Haglund and Svarvar 2000
Rofecoxib monotherapy	United Kingdom	US\$2,184 per life year saved (result was sensitive to the use of gastrointestinal protective agents)	n.a.	Moore and others 2001
Different packages of drugs, including acetaminophen, naproxen, misoprostol, celecoxib, and rofecoxib	United States	US\$2,001 to US\$2,140 per QALY, depending on the drug combination	n.a.	Sigal 2002
Total hip arthroplasty	United States	US\$6,893 per QALY for 85-year-old men	n.a.	Chang, Pellissier, and Hazen 1996
Knee replacement	Australia	US\$6,000 per QALY		Sigal and others 2004

Source: Authors.

QALY = quality-adjusted life year.

Note: Costs are based in current U.S. dollars as presented in each study. Many studies do not present well-documented data regarding reference period of costs. To avoid mistakes on interpretation, we kept the costs in the currency informed by the authors. n.a. indicates that information is not available.

cancer being one of the most important. Recommended strategies involve early detection and treatment. The following are the main strategies to prevent cervical cancer:

- screening and treatment performed during the same visit
- screening and treatment performed at two separate visits
- traditional three-visit intervention, in which a cytology sample is obtained during the first visit, a diagnostic colposcopy is performed for those who screened positive during the second visit, and treatment is provided at the third visit.

The data on costs associated with cervical cancer detection and treatment in developing countries are limited. In Honduras in 1991, costs per visit for cervical cancer detection varied from US\$5.60 (small clinics) to US\$12.90 (larger clinics) (Mumford and others 1998). Lower detection costs were found in Ecuador in 1996 (US\$2.95 to US\$3.51 per visit) and in Zimbabwe in 1995 (US\$3.00 to US\$3.90 per visit). Recent studies on cervical cancer screening in South Africa show that the two-visit method is more cost-effective than the traditional three-visit method, US\$39 per DALY averted compared with US\$81 (Goldie and others 2001). Studies in Vietnam found costs equivalent to US\$725 per DALY averted with cytology screening (Suba and others 2001).

Regarding treatment of cervical cancer, Rose and Lappas's (2000) studies in developed countries find costs varying from US\$2,384 to US\$28,770 per DALY averted. Costs are lower in developing countries, ranging from US\$52.51 to US\$432.42 per visit in Mexico and from US\$12.35 to US\$95.82 per visit

in Zimbabwe. Differences in treatment costs are associated with the kinds of procedures used. How the results of cost-effectiveness studies for cervical cancer prevention and screening interventions in developed countries might translate to health care delivery settings in developing countries is not clear, but prevention could clearly play an important role.

Many studies of breast cancer prevention view diet as an important condition explaining the predisposition for breast cancer. Ministries of health in many developing countries invest in promotion and prevention, issuing communications and guidelines for early detection using self-testing as a cost-effective way to provide information. Few studies of the cost-effectiveness of different breast cancer treatments are available, especially in developing countries. One on the management of breast cancer in Brazil in 1995 showed extremely high costs of US\$1,678 per death averted (Arredondo, Lockett, and Icaza 1995).

Conditions That Affect Women Disproportionately

Few studies on shared diseases that affect women disproportionately include gender-related considerations, especially in developing countries. Most literature on Alzheimer's disease, unipolar depressive disorders, and osteoarthritis presented in this section is based on studies in developed countries with no specific analysis of gender differences in relation to cost-effectiveness.

Alzheimer's Disease and Other Dementias. Alzheimer's disease is linked to genetic and other risk factors, including

increasing age, positive family history of dementia, and lower levels of education. Treatment is based mostly on drugs, and the practical benefits of treatment translate mainly into reduced caregiver hours.

Some studies have found that interventions aimed at reducing caregiver stress, even providing low-dose antipsychotic medication, can be effective. However, the costs of undertaking such interventions have not been quantified; thus, their cost-effectiveness cannot be calculated. Institutional care for patients with any form of dementia is extremely limited in LMICs. The costs of setting up institutions for those with Alzheimer's disease and the costs of care are prohibitive. In this context, inexpensive, home-based care appears to be the only viable option for Alzheimer's disease patients in developing countries. These countries will therefore have to face the challenges of addressing families' needs in relation to financial and social support and caregiver training. Another issue is the tradeoff between women's income-earning opportunities and their traditional primary role as family caregivers.

Unipolar Depressive Disorders. Depression is among the most disabling and costly illnesses in the world, especially for women. Despite good short-term treatment outcomes, long-term outcomes remain disappointing. Costs associated with depression affect not just the sufferers themselves, but also their families and friends (time dedicated to caregiving); employers (payment for treatment and care, as well as for reduced productivity); and society (provision of mental health care financed by taxpayers). Most of these costs are difficult to obtain, but the consensus is that the indirect costs of depression are larger than the direct costs.

The treatment setting for depression is usually primary health care, with many kinds of episodic treatments combining old and new generations of antidepressants and psychosocial procedures. Averting depressive episodes results in average gains of up to 50 disability days per treated case per year. Studies of the factors influencing women's access to screening, prevention, and treatment for depression and the cost-effectiveness of treatment options should be a priority in developing countries.

Osteoarthritis. Despite clear evidence of a reduction in symptoms and delayed progression of osteoarthritis with weight reduction, no formal studies of cost-effectiveness are available. Education and exercise programs for osteoarthritis are available in developed countries, but such programs are unknown in developing countries. Studies of the effect of diet and physical exercise in preventing osteoarthritis in women are a priority not just in developed countries, but especially in developing countries with fiscally strapped health systems and growing elderly populations.

Acetaminophen is thought to be the most cost-effective initial treatment with drugs. In addition, some cost-effectiveness

measures of using several kinds of medicines (acetaminophen, naproxen, misoprostol, celecoxib, and rofecoxib) under different conditions are available. Sigal (2002) shows that by using different combinations of medicines, treatment costs can vary from US\$2,001 to US\$2,140 per quality-adjusted life year, but these costs are prohibitive for developing countries.

Another treatment for osteoarthritis is synovial fluid replacement, but given the costs of this intervention, it is not currently recommended for developing regions. Surgical interventions for osteoarthritis, such as joint replacement, are most commonly performed in developed countries. Sigal and others (2004) review a number of interventions for osteoarthritis and suggest a cost per quality-adjusted life year of US\$6,000 for knee replacements. In developing countries, however, the availability of surgical interventions is constrained by its costs and by the availability of surgeons qualified to perform the operation.

RESEARCH AGENDA

Health research and practice should give priority attention to the 19 conditions with excess burdens for women that this chapter has identified and clustered into four main groups, according to the interplay of sex and gender in their etiology, to improve women's health status worldwide. A number of cost-effective health technologies are available, but women are dying because these technologies are not available and accessible to all. Thus, a priority need is to deploy them more widely in developing countries. The research challenge is also urgent, given the unacceptably high disease burdens for women in developing countries and the rising numbers of older women worldwide. Research on sex and gender factors affecting women's disease burdens should give physicians new information that will increase their options in relation to diagnostic practices and drug approaches, not only for women, but also for men, thereby improving the provision of gender-appropriate health care for all.

Key general items in a research agenda to reduce women's excess disease burdens include the following:

- Expand and sharpen analyses of sex and gender and their interaction in the etiology, onset, progression, prevention, and treatment of diseases that women and men share, but where women face an excess health burden, and in the assessment of cost-effective interventions.
- Increase research to identify the determinants of women's underuse of health services, paying special attention to the accessibility, affordability, and appropriateness of services. Identify and analyze best practices in health service delivery that incorporate gender variables to inform training and human resource development programs for health sector providers in developing countries for both services specific to women and general services.

- Investigate how interactions between sex and gender, race, ethnicity, and poverty affect the etiology, onset, and progression of disease as well as access to and compliance with prevention and treatment. Investigate the effects of stigmatization and discrimination on service quality and use.
- Use demographic accounting methods to project and plan for the demands that women's overall greater longevity imposes on health systems and investigate cost-effective treatment options, effect of gender variables on prevention and treatment, and viable options for increasing older women's access to health and to social insurance and protection mechanisms. Investigate affordable options for family care of elderly patients that take into account the time and the physical and emotional burdens on women, the traditional family caretakers.
- Improve the methodology used for disease classification, and expand data collection efforts to address the largely unreported causes of women's disease burdens, emphasizing conditions specific to women, including FGM and other domestic-, social-, and religious-based violence against women.
- Promote research, health promotion activities, health services, and advocacy efforts that will help women adopt desirable nutrition and physical exercise practices for optimal health. Exercise is a preventive measure that can help reduce women's excess disease burdens throughout the life cycle and has numerous indirect psychological and social benefits, but it will often require changing deeply rooted cultural mores.
- Support research on the costs and effectiveness of treatments for diseases that affect both men and women but affect women disproportionately, especially in developing countries.

Research needs pertaining to specific conditions include the following:

- Carry out further testing of innovative technologies for diagnosing neoplasms specific to women and explore new options for preventing their growth and proliferation. Regarding treatment, the literature describes few best practices and cost-effective measures, especially for breast and ovarian cancer.
- Evaluate the viability of applying the results of cost-effectiveness analysis carried out in developed countries on the prevention and treatment of cancers specific to women in developing countries to help adapt viable procedures.
- Promote and study the cost-effectiveness of approaches to preventing Alzheimer's disease, osteoarthritis, and other chronic conditions related to aging.
- Compare the prevalence of Alzheimer's disease in different populations, including carrying out genetic epi-

demology studies to assess the importance of different genetic risks.

- Expand research on the biological and behavioral determinants of depression in women, on screening alternatives, and on cost-effective prevention and treatment options adapted to specific contexts in developing countries. Explore ways to reduce the stigmatization and discrimination associated with depression in developing countries.
- Continue research to document the risks and benefits of common, but unproven, approaches of preventing and treating diseases specific to women, such as the finding that long-term hormone replacement therapy does not reduce cardiovascular disease in postmenopausal women as had long been thought but instead increases risks for cardiovascular disease and breast cancer.
- Establish a research program to document the prevalence and disease burdens associated with FGM, and seek prevention and treatment alternatives.

CONCLUSIONS

The purpose of this chapter has been to move beyond the traditional international health focus on women's diseases related to their reproductive and maternal functions and to highlight those conditions for which sex and gender considerations, if adequately incorporated into prevention and treatment, could reduce women's excess health burdens and, as a result, increase health equity. Because of the approach taken, the chapter has excluded a set of important conditions for which the gender ratio is similar or is unfavorable for men, including HIV/AIDS, injuries resulting from domestic violence, and malaria. Therefore, this chapter should not be viewed as covering all diseases and conditions important to women or all conditions that result from the interaction of sex and gender.

The chapter has two other main limitations. First, the dataset (the global burden of disease) understates certain disease burdens, especially for women, because it does not estimate disability weights for some gender-based conditions, such as FGM. Second, the information available for cost-effectiveness analysis is inadequate. Following this chapter's emphasis on the importance of sex and gender in explaining women's excess disease burdens, assuming that sex and gender considerations in prevention and treatment would affect the analysis of cost-effectiveness seemed reasonable; however, general information for assessing cost-effectiveness was deficient, and gender-related information was entirely lacking. This limitation was additional to the common limitation of cost-effectiveness analysis in terms of underestimating the value of prevention for conditions specific to women and non-health sector interventions important to women.

Annex 10.A Milestones and Influential Works in International Women's Health (1980–2003)

Year	Milestones and Influential Work	
1980		<ul style="list-style-type: none"> • Maternal and child health • Infant feeding practices • Women's reproductive and fertility behaviors
1984		<ul style="list-style-type: none"> • Child survival research (Mosley and Chen 1984) • Women's issues for child survival
1985	UN Women's Conference in Nairobi	<ul style="list-style-type: none"> • Gender perspective/framework (DAWN)
1987	Safe Motherhood Initiative (World Bank)	<ul style="list-style-type: none"> • Barber Conable speech (Conable 1986) • Herz and Measham 1987
	Reproductive Health and Dignity: Choices by Third World Women (International Women's Health Coalition)	<ul style="list-style-type: none"> • Germain 1987
1988	Women's Work and Child Nutrition (Leslie 1988)	<ul style="list-style-type: none"> • Debunks myth of incompatibility between breastfeeding and work
1989	Quality of Care for Women in Family Planning (Population Council)	<ul style="list-style-type: none"> • Quality of care (Bruce 1990)
1990	1990–1994: 10 Working Papers (World Bank)	<ul style="list-style-type: none"> • Life-stage focus: adolescents, postreproductive age, and so on • Burden focus: cervical cancer, abortion, HIV/AIDS, reproductive tract infections, violence, and so on
1992	Women's Health: Across Age and Frontier (WHO)	<ul style="list-style-type: none"> • Socioeconomic, cultural, and legal factors affecting women's health • Policy directions for women's nutrition • Access and empowerment
1993	Disease Control Priorities in Developing Countries (World Bank)	<ul style="list-style-type: none"> • Cost-effectiveness issues in women's health • Missing women in India (A. K. Sen 1990) • Sector study of women's health in India (1992)
1994	New Agenda for Women's Health and Nutrition (World Bank)	<ul style="list-style-type: none"> • Lifecycle approach to account for specific and cumulative effects of nutrition • Cost-effective intervention packages advocated • Women and AIDS (Mann 1993) • Stigma and lack of empowerment as risk factors
	International Conference on Population and Development, Cairo	<ul style="list-style-type: none"> • Agenda setting, policy making, and programming for reproductive health since the 1994 Cairo conference
1995	UN Beijing Women's Conference	<ul style="list-style-type: none"> • Reproductive health and rights
1996	In Her Lifetime: Female Morbidity and Mortality in Sub-Saharan Africa (Institute of Medicine)	<ul style="list-style-type: none"> • Burdens exclusive to, greater for, and of particular significance to women reviewed • Burdens tracked across life span
1998	Women, Aging and Health (WHO)	<ul style="list-style-type: none"> • Social, cultural, political, economic determinants of major health issues facing aging and postmenopausal women • Life-cycle approach
	Gender and Health: A Technical Paper (WHO)	<ul style="list-style-type: none"> • Role of social and cultural factors and power relations between men and women in promoting and protecting health
1999	Safe Motherhood and the World Bank	<ul style="list-style-type: none"> • Effect of safe motherhood on labor supply, productive capacity, community economic well-being
	Gender and HIV/AIDS (Joint United Nations Program on HIV, International Center for Research on Women)	<ul style="list-style-type: none"> • Gender-specific personal and societal vulnerability to HIV/AIDS
2000	Women of South East Asia: Health Profile (WHO)	<ul style="list-style-type: none"> • Life-cycle approach to review gender-specific and disproportionate burdens
	Improving Women's Health: Issues and Interventions (World Bank)	<ul style="list-style-type: none"> • Role of biological and social factors in women's exposure risk and disease progression • Life cycle approach

Annex 10.A Continued

Year	Milestones and Influential work
2000	2000: Investing in the Best Buys (World Bank) <ul style="list-style-type: none"> • Emphasis on identifying and funding most cost-effective programs and factors that lead to program success
2002	2002: Reproductive Health Outlook: Older Women <ul style="list-style-type: none"> • Health conditions and interventions for older women
	2002: International Position Paper on Women's Health and Menopause (National Institutes of Health) <ul style="list-style-type: none"> • Best clinical practices to address conditions associated with menopause

Source: Adapted from an original project proposal for this volume by S. Goldie, R. Anhang, and M. Buvinić. 2004. *The Evolving Agenda for Women's Health*.

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NOTES

1. See, for instance, the documentation of efforts to understand gender differentials in infectious diseases (Altman 2004) and in unipolar depressive disorders (Gilbert 2004).

2. Males suffer the weight of some external causes in the burden of diseases more than females. For example, in 2001, mortality and morbidity caused by war and violence worldwide accounted for about 2.7 percent of males' total DALY losses and 0.6 percent of females' losses.

3. Cardiovascular diseases include cerebrovascular diseases but do not include ischemic heart disease, which affects men more than women, or coronary artery disease.

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