

# HEALTH DISPARITIES AND HEALTH EQUITY: Concepts and Measurement

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**Key Words** health inequalities, social inequalities in health, theory, conceptual framework, definitions

■ **Abstract** There is little consensus about the meaning of the terms “health disparities,” “health inequalities,” or “health equity.” The definitions can have important practical consequences, determining the measurements that are monitored by governments and international agencies and the activities that will be supported by resources earmarked to address health disparities/inequalities or health equity. This paper aims to clarify the concepts of health disparities/inequalities (used interchangeably here) and health equity, focusing on the implications of different definitions for measurement and hence for accountability. Health disparities/inequalities do not refer to all differences in health. A health disparity/inequality is a particular type of difference in health (or in the most important influences on health that could potentially be shaped by policies); it is a difference in which disadvantaged social groups—such as the poor, racial/ethnic minorities, women, or other groups who have persistently experienced social disadvantage or discrimination—systematically experience worse health or greater health risks than more advantaged social groups. (“Social advantage” refers to one’s relative position in a social hierarchy determined by wealth, power, and/or prestige.) Health disparities/inequalities include differences between the most advantaged group in a given category—e.g., the wealthiest, the most powerful racial/ethnic group—and all others, not only between the best- and worst-off groups. Pursuing health equity means pursuing the elimination of such health disparities/inequalities.

## INTRODUCTION AND BACKGROUND: WHY DISCUSS THESE CONCEPTS?

The terms “health disparities” and “health inequalities” (used interchangeably here), while hardly household terms among the general public, have by now become familiar to many health practitioners, program managers, and policy-makers as well as researchers in the United States and other countries; “health equity” is a term rarely encountered in the United States but more familiar to public health professionals elsewhere. There is little consensus about what these terms mean, however (13–15, 76, 77, 80), and the resulting lack of clarity is not merely of

academic concern. How one defines “health disparities” or “health equity” can have important policy implications with practical consequences. It can determine not only which measurements are monitored by national, state/provincial, and local governments and international agencies, but also which activities will receive support from resources allocated to address health disparities/inequalities and health equity (15). This paper aims to clarify the concepts of health disparities/inequalities and health equity, focusing on the implications of different definitions for measuring disparities and pursuing health equity.

The most concise and accessible definition of health disparities/inequalities/equity was articulated by Margaret Whitehead (106, 107) in the early 1990s as differences in health that “are not only unnecessary and avoidable but, in addition, are considered unfair and unjust.” She wrote: “Equity in health implies that ideally everyone should have a fair opportunity to attain their full health potential and, more pragmatically, that no one should be disadvantaged from achieving this potential, if it can be avoided” (106). She defined equity in health care “as equal access to available care for equal need, equal utilization for equal need, equal quality of care for all” (106). Note that in the context in which this definition was formulated, i.e., the United Kingdom and Europe overall, the term “health inequalities” has almost universally been understood to refer to differences in health between people with different positions in a socioeconomic hierarchy; health inequalities by gender and, less frequently, by ethnic group or national origin have received some but more limited attention. Whitehead’s definition has been extremely useful in communicating with policy-makers and the public in diverse settings around the world. At the end of the 1990s, however, an international debate emerged about the scope of “health inequalities/disparities” and “health equity” and how they should be measured, with far-reaching consequences (discussed below) (3, 14, 15, 32, 80, 99).

Throughout the 1990s, the European Office of the World Health Organization (EURO) played an active role in bringing attention to the issue of health inequalities and their measurement within European countries (25, 56, 106). The document that first presented Whitehead’s definition (106) was part of a series of documents issued by EURO to support this initiative; these documents, including one focused on policies and strategies (25) and one on measurement, which, along with Whitehead’s paper, were subsequently summarized in peer-reviewed literature (65). A global initiative on Equity in Health and Health Care launched at the World Health Organization (WHO) Headquarters in Geneva in 1995 focused on placing the issue of health equity—within countries of all per-capita economic levels and between countries of different per-capita economic levels—higher on the policy agendas of international agencies and national governments. Complementing WHO efforts in Europe, the global effort focused on strengthening capacity for monitoring health equity within lower-income countries (9, 16, 115).

By 1999, however, new leadership at WHO in Geneva terminated the equity initiative. Claiming that health equity and health inequality issues would continue to be addressed, the WHO leadership at that time shifted the focus to a new

measurement approach (80). That new approach, which calculated the magnitude of health differences across ungrouped individuals (80), was criticized by some for removing ethical and human rights considerations from the process of measuring health inequalities (14, 15), thereby making previous efforts no longer relevant. Subsequent sections of this paper discuss that shift in approach (which was promptly discontinued when new leadership arrived at WHO in 2003) and its conceptual and practical implications for work to promote health equity; we present this history as an example to illustrate and underscore the practical need for a clear and explicit definition of health disparities and health equity.

## How Have These Concepts Been Defined, Explicitly or Implicitly?

ALL HEALTH DIFFERENCES OR A SPECIFIC SUBSET OF HEALTH DIFFERENCES? Webster's dictionary (75) defines "disparity" as a difference, without qualifying the nature of the difference or who or what may be affected. Using this broad definition, the study of health disparities would encompass all of epidemiology, the science of the distribution of diseases and risk factors across different populations. In contrast, Whitehead's definition of health inequalities in her influential paper, "The concepts and principles of equity in health" (107), does not refer generically to all differences in health but focuses specifically on the subset of differences that are "avoidable, unfair, and unjust." Although the term "disadvantaged" does not appear within her brief definition, Whitehead makes it clear that she refers to differences that adversely affect "disadvantaged nations and groups" within nations. The notions of "avoidability," "injustice," and "unfairness" are defined implicitly by several examples, including differences in children's life expectancy according to their parents' social class or in adults' life expectancy according to their own social class, as well as differences in a range of health indicators by residence in urban versus rural settings or in slums versus affluent areas within the same city. Whitehead's definition has provided a succinct, intuitive, and easily understood way to conceptualize health inequalities. It can be effectively communicated to policy-makers, the public, and the lay press, at least where there is some degree of underlying consensus that not all groups in society have equal opportunities to be healthy.

IMPLICIT ASSUMPTIONS IN INTERNATIONAL LITERATURE In accordance with the comparisons that implicitly underlie Whitehead's definition of health inequalities, established methods for measuring health inequalities have always compared more and less advantaged social groups with each other. In Europe and most other regions of the world, health inequalities have implicitly been understood to refer to health differences between better- and worse-off socioeconomic groups. Socioeconomic position typically is measured based on: educational attainment; occupational characteristics (e.g., manual versus nonmanual work, or more detailed categories corresponding to the prestige, control/power, and/or earnings that

typically accompany a given job); income/expenditures, accumulated wealth, or living conditions; health insurance; or residence in geographic areas with particular social or economic conditions (9, 16, 37, 38, 54, 60, 62, 64–66, 70–72, 74, 95, 104, 110). Under the rubric of health equity, studies in many countries also have examined gender inequalities in health (4, 30, 50, 63, 78, 84, 92, 96) or health care (16, 97, 105); apart from studies of immigrant or aboriginal health, racial/ethnic inequalities have generally received less attention in literature outside the United States.

**DEFINITIONS IN THE PUBLISHED LITERATURE** Several definitions in addition to Whitehead's have appeared in the international literature, although none has been as widely used. Tables 1 (p. 171) and 2 (pp. 173–75) list, generally in chronological order of their appearance in the literature, several definitions of health care (Table 1) or health (Tables 2–4, pp. 173–77) inequalities or equity, commenting briefly on their strengths and weaknesses, with further discussion in the text.

*Equity in health care* Table 1 lists several definitions of equity in health care. According to Aday's definition (1), equity in health care requires that resource allocation and access to health care be determined by health needs. Mooney noted, as have others, two distinct important aspects of equity: horizontal equity, or equal treatment for equal need; and vertical equity, or different treatment for different need (specifically, more resources for greater need) (24, 51, 76, 77). Mooney (76, 77) also discussed the lack of clarity regarding the ethical basis for diverse definitions of equity in health care, along with the health service resource allocation implications of a range of commonly used definitions (including equal expenditure or resources per capita; equal resources for equal need, opportunity for access, or utilization for equal need; equal progress toward meeting priorities; and equal health outcomes) (76). Culyer & Wagstaff (24) explored four definitions of health care equity—equal utilization, distribution according to need, equal access, and equal health outcomes, noting both the inadequacy of prevailing definitions of need and the “incompatibility” of these four definitions in terms of practical implications.

*Equity in health (with or without including health care)* Starting with the Whitehead definition, Table 2 (pp. 173–75) lists several published definitions of inequalities/disparities or equity in health itself, including various aspects of health. The 1995–1998 WHO initiative on Equity in Health and Health Care (9, 115) operationally defined equity in health as “minimizing avoidable disparities in health and its determinants—including but not limited to health care—between groups of people who have different levels of underlying social advantage or privilege, i.e., different levels of power, wealth, or prestige due to their positions in society relative to other groups,” noting that “[in] virtually every society in the world, differences in social advantage are reflected by socioeconomic, gender, ethnic, . . . age . . . and other differences” (9). At that time, WHO documents also stated that equity in health implies consideration of “. . . need rather than underlying social advantage. . . in decisions about resource allocation that affect health” (9, 115). In contrast, as noted in Table 2,

**TABLE 1** Selected definitions of equity in health care (distinguished from health status; see Tables 2–4)

Source	Definition	Strengths	Weaknesses
1. Aday 1984 (1)	Health care is equitable when resource allocation and access are determined by health needs	Covers both allocation and access (as manifest by utilization/receipt of services)	As acknowledged by Aday, defining health needs is difficult and open to diverging interpretations. Does not explicitly address underlying social/economic advantage, so could be used to justify wide range of activities, including some with little relevance to social justice
2. Mooney 1983 (and others) (76)	Horizontal equity requires equal treatment for equal need	Addresses need for preferential treatment for those with greater needs	As discussed by Mooney (76), the difficulty of defining need for care
3. Culyer & Wagstaff 1993 (24)	Equity in health care can mean: equal utilization, distribution according to need, equal access, equal health outcomes	They discussed strengths, limitations, and different implications of each definition	

definition 3, a group of researchers based at WHO during 1998–2003 advocated defining health inequalities (and, by extension, inequity) as any avoidable differences in health between any individuals, who should not be grouped a priori according to social characteristics, except possibly geographic location (80, 113). The International Society for Equity in Health (ISEqH) defined equity in health as “the absence of systematic and potentially remediable differences in one or more aspects of health across populations or population subgroups defined socially, economically, demographically, or geographically” (40, 61, 98); this definition [and subsequent definitions by Braveman & Gruskin (12, 13)] adds Starfield’s (94) important concept that differences relevant to equity are systematic rather than random or occasional. Unlike definition three in Table 2, the ISEqH definition does specify that comparisons between groups are required to assess equity. Unlike most of the other definitions in Table 2, however, the ISEqH definition does not indicate—either explicitly or implicitly—that the relevant comparisons are between groups

that differ on underlying social position; it thus could be applied without social justice implications to a wide range of epidemiologic studies. For example, using the ISEqH definition, health equity could be assessed based on comparing rates of a particular illness, e.g., cancer, between people who reside in two geographically distinct (but socially similar) areas. Although it may be of public health concern, this kind of difference does not have social justice implications and hence is not relevant to health disparities/equity as these terms are widely, albeit implicitly, understood.

Graham's definition (36) incorporates elements of both the 1995–1998 WHO and Starfield's definitions, considering health inequalities or disparities to be “systematic differences in the health of groups and communities occupying unequal positions in society.” Although succinct, this definition does not address relevant differences in the determinants of health nor explain what is meant by “social position”—a term that has meaning for social scientists but is unfamiliar to many health professionals, including researchers who are not social scientists, or the public.

*Definitions and assumptions underlying health disparities initiatives in the United States* As examples of typical approaches in the United States, Table 3 lists several definitions of health disparities that are currently used by major governmental or professional public health agencies. Carter-Pokras (18) provided an extensive list of such definitions, pointing out differences and potential policy implications.

Since the mid-1990s when the term first came into use, “health disparities” (the term “health equity” being less frequently used in the United States) have generally been assumed to refer to health or health care differences between racial/ethnic groups. The conceptual and ethical basis for this assumption typically is not explicitly articulated. A large and growing body of U.S. literature focuses on racial/ethnic disparities in health status (22, 34, 35, 46, 52, 79, 83, 108, 109) and in health care (2, 39). Most of this work compares disadvantaged racial/ethnic groups—usually African Americans, Latinos/Hispanics, and Native Americans, and sometimes Asians/Pacific Islanders—with non-Latino “whites” of primarily European background. Although racial/ethnic disparities have been the primary focus of government initiatives during this time period, there also is an accumulating research literature on socioeconomic disparities in health in the United States (6, 7, 23, 29, 31, 41, 44, 53, 57–59, 67, 73, 85, 90, 101, 108, 111, 116), and some recent research on gender disparities in health (78) or health care (5, 8, 21, 53, 91).

## HOW HAVE HEALTH DISPARITIES/INEQUALITIES AND HEALTH EQUITY BEEN MEASURED, AND WHAT ARE THE CONCEPTUAL IMPLICATIONS?

A range of methods has been used to quantify health disparities/equity, each reflecting implicit assumptions about definitions (17, 33, 43, 55, 65, 69, 102–104, 112). In the work of recognized experts in the field of measuring health

**TABLE 2** Selected definitions of health<sup>a</sup> disparities, inequalities, or equity in previous literature, in chronological order of publication

Source	Definition (full or excerpts)	Strengths	Weaknesses
1. Whitehead 1990, 1992 (106, 107)	Health inequalities are differences in health that are “avoidable,” “unjust, and unfair” (106, 107) Equity in health means that all persons have fair opportunities to attain their full health potential, to the extent possible (106)	Intuitive, clear and accessible to nontechnical audiences	Unjust, unfair, and avoidable are defined by examples versus explicitly, hence open to interpretation. Does not provide guidance on measurement
2A. WHO/Braveman 1996 (115)	Equity means that people’s needs, rather than their social privileges, guide the distribution of opportunities for well-being. In virtually every society in the world, social privilege is reflected by differences in socioeconomic status, gender, geographical location, racial/ethnic/religious differences and age. Pursuing equity in health means trying to reduce avoidable gaps in health status and health services between groups with different levels of social privilege (115)	Explicitly refers to comparisons among more and less socially advantaged groups Wide range of social groups (e.g., by race/ethnicity/religion, gender, disability, sexual orientation) are included, not only socioeconomically disadvantaged Measurement implications are more clear	Neither 2A nor 2B is as appealing intuitively, as brief, or as clear to nontechnical audiences as Whitehead’s definition. 2A does not explicitly mention health determinants apart from health care, although Executive Summary to same document notes that “overall economic and social influences are powerful—often the most powerful—determinants of health” (115)
2B. Braveman/WHO 1998 (9)	Equity in health is operationally defined as minimizing avoidable disparities in health and its determinants—including but not limited to health care—between groups of people who have different levels of underlying social advantage (9)	Same strengths as 2A (above), and 2B explicitly includes health determinants	

*(Continued)*

TABLE 2 (Continued)

Source	Definition (full or excerpts)	Strengths	Weaknesses
3. Murray et al. 1999 (80); used in WHO's <i>World Health Report 2000</i> (114)	These authors regarded health inequalities as any avoidable differences in health among any individuals, who should not be grouped a priori according to social characteristics (except possibly geographic location)	Health differences among ungrouped individuals are easier to measure, as there is no need for data disaggregated by social characteristics. The authors argued that standard ways of defining and measuring health inequalities/equity are flawed in that they tend to prejudice causation and obscure intra-group differences	Removes ethical and human rights considerations from the concept and measurement of health inequalities/equity; does not reflect social justice concerns
4. International Society for Equity in Health (ISEqH), 2005 (40); Starfield 2001 (98); Macinko & Starfield 2002 (61)	Equity in health is "the absence of systematic and potentially remediable differences in one or more aspects of health across populations or population subgroups defined socially, economically, demographically, or geographically" (40)	Introduces the important criterion that the relevant differences are systematic; specifies comparisons between socially defined groups	Social justice relevance is not clear: Groups could be defined socially, demographically, or geographically without reference to social advantage. Even with grouping by social advantage, comparisons might not address social justice if attention were not selectively focused on differences on which the a priori disadvantaged had worse health or health risks
5. Braveman & Gruskin 2003 (13)	For the purposes of measurement and operationalisation, equity in health is the absence of systematic disparities in health (or in the major social determinants of health) between	Measurement implications are clear, requiring comparisons among more and less advantaged social groups	Long, complex and technical; not suitable for nontechnical audiences



<p>groups with different levels of underlying social advantage/disadvantage—that is, wealth, power, or prestige. Inequities in health systematically put groups of people who are already socially disadvantaged (for example, by virtue of being poor, female, and/or members of a disenfranchised racial, ethnic or religious group) at further disadvantage with respect to their health; health is essential to wellbeing and to overcoming other effects of social disadvantage. Assessing health equity requires comparing health and its social determinants between more and less advantaged social groups” (13)</p>	<p>Specifies that relevant comparisons are ones on which disadvantaged groups do worse          Incorporated Starfield’s (2001) notion of systematic differences          Includes determinants of health          Links with human rights concepts [see also (2)]</p>	<p>Does not explicitly mention avoidability</p>
<p>6. Graham 2004 (36)</p> <p>Health inequalities are “systematic differences in the health of groups and communities occupying unequal positions in society”</p>	<p>Succinctly covers many key concepts, including systematic nature of differences, comparisons between groups, and relevance of social position</p>	<p>Does not explicitly address health determinants          Does not restrict comparisons to those in which the socially disadvantaged are disadvantaged on health; e.g., could apply to differences favoring the disadvantaged, such as longer life expectancy among women, better birth outcomes among Latina immigrants in US. “Unequal positions in society” may not be widely understood without further explanation          Does not address avoidability</p>

<sup>a</sup> Referring to health itself, with or without care; distinguished from definitions restricted to health care.

**TABLE 3** A few examples of definitions of health disparities currently used by U.S. agencies<sup>a</sup>

Source	Definition	Strengths	Weaknesses
1. CDC Office of Minority Health [ <a href="http://www.cdc.gov/omb/AMH/AMH.htm">http://www.cdc.gov/omb/AMH/AMH.htm</a> ]; also used in <i>Healthy People 2010</i> (100)	Health disparities include “differences . . . by gender, race or ethnicity, education or income, disability, geographic location, or sexual orientation.” “Compelling evidence of large and often increasing racial/ethnic disparities demand national attention.” “Racial and ethnic minority populations” [the racial/ethnic groups of concern] are: American Indian & Alaska Native . . . , Asian American, black or African American, Hispanic or Latino, and Native Hawaiian and Other Pacific Islander	Mentions range of characteristics associated with social disadvantage, making that criterion implicit. Justifies focus on racial/ethnic disparities because of magnitude, pervasiveness, and persistence or widening of these gaps, and specifies groups of concern. Easily understandable to wide audiences	Does not specify the types of differences or comparisons of concern, leaving an opening for misinterpretation; e.g., if European Americans, and/or persons of relatively high income/education experience worse health on a particular outcome, would they warrant attention under health disparities initiatives? Because relevance of social disadvantage is implicit rather than explicit, it does not specify the reference group (although this is implicitly clear for racial/ethnic disparities)

2. National Institutes of Health, 2005 (81)	Health disparities are “differences in the incidence, prevalence, mortality, and burden of disease and other adverse health conditions that exist among specific population groups in the United States.” NIH will initially focus on racial/ethnic disparities but “disparities related to socioeconomic status will also be addressed”	Focuses on differences among defined social groups. Prioritizes racial/ethnic disparities, reflecting implicit values (unacceptability of long-standing injustice)	As with the ISEqH definition, does not specify comparisons among more and less advantaged groups. Not specifying the kinds of social groups or the reference groups leaves these open for interpretation in ways that do not reflect social justice concerns. Values are implicit, not explicit; e.g., open to interpretation why racial/ethnic disparities should receive priority attention, which could leave that focus open to attack
3. National Cancer Institute (NIH), National Center to Reduce Cancer Health Disparities [http://crchd.nci.nih.gov/chd/disparities/defined.html]	“Disparities—or inequalities—occur when members of certain population groups do not enjoy the same health status as other groups. Disparities are most often identified along racial and ethnic lines—showing that African Americans, Hispanics, Native Americans, Asian Americans, Alaska Natives and whites have different disease rates and survival rates. But disparities also extend beyond race and ethnicity...” and “can be noted on the basis of income and education”	Strengths: Focuses on disparities among defined social groups. Notes that disparities can extend beyond race and ethnicity, and explicitly mentions 2 socioeconomic characteristics	Could apply to any differences and comparisons between any groups. Same weaknesses as definition two, above

<sup>a</sup> All websites accessed Aug. 24, 2005.

inequalities/disparities/equity, measurement almost always involves comparing an indicator of health or a health-related factor in one or more disadvantaged groups with the same indicator in a more advantaged group or groups. Most often, the reference group is the most advantaged group—e.g., the wealthiest/highest-income group for disparities by wealth/income, or the dominant racial/ethnic group for racial/ethnic disparities. At times, the level of a health indicator in a disadvantaged group may be compared with the average level in the population, but this practice generally reflects data limitations and is not featured in the work of experts. Comparing the health of a disadvantaged group with average levels of health may not be very informative about social inequalities in health. For example, in a setting in which a large proportion of a population is disadvantaged, the health of the most disadvantaged may be markedly different from that of the best-off social group but not very different from the average; it would be erroneous to assess the magnitude of disparities as small.

When only two groups are compared, the “rate ratio”—i.e., the rate of a given health indicator in one group divided by the rate in another group—is most commonly calculated to measure a particular disparity; for example, in the United States, the annual rate of infant mortality among African American babies (14.4 per 1000 live births) is more than two times the rate among European American babies (5.7 per 1000 livebirths) (82). Two groups can also be compared by calculating a “rate difference” or absolute difference in rates; for example, the rate difference in infant mortality between African Americans and European Americans is approximately 8 per 1000 live births. Both absolute and relative differences can be meaningful.

More complex methods, such as the population attributable risk, the slope and relative indices of inequality, and the concentration curve and index (20, 55, 112), also have been used. These methods can be useful for quantifying the magnitude of socioeconomic inequalities in health, reflecting comparisons among more than two groups, addressing changes in the group sizes over time, and/or reflecting absolute levels of a health indicator as well as relative differences across social groups. These approaches and their implications are well explained by Mackenbach & Kunst (65) and Wagstaff et al. (103). Established methods for measuring health inequality must be distinguished from those, such as the Gini coefficient, designed to measure economic (usually income) inequality (42). In nontechnical terms, the Gini coefficient can be thought of as reflecting the overall extent of difference between the observed distribution of economic resources (e.g., income) in a given society and a theoretical situation in which everyone has exactly the same economic resources, considering differences in economic resources among individuals without comparing different social groups defined by characteristics other than economic resources. Some authors have examined how income inequalities in specified geographic areas (using the Gini coefficient or similar measures) are associated with aggregate levels of health experienced by people residing in those areas (45, 47, 48, 110).

As noted above, measurement of health disparities/inequalities by experts in the field has consistently reflected a clear (albeit usually implicit) assumption that the

relevant differences are those between better- and worse-off social groups, selected a priori based on who historically has been more and less advantaged in a society. This assumption was explicitly expressed in documents published as part of the World Health Organization's (WHO) initiative on Equity in Health and Health Care between 1996 and 1998 (9, 115). In contrast, also noted above, a group of individuals who worked at WHO between 1998 and 2003 developed a markedly different approach to measuring health disparities, featured in WHO's annual report for the year 2000, *World Health Report 2000* (80, 114). This group criticized the measurement approaches in standard use, saying that these approaches prejudged causation and obscured differences within groups; using the new method proposed by this group, health inequalities would be measured by assessing overall differences in health among ungrouped individuals, without comparing health across different predetermined social groups (e.g., different socioeconomic groups or castes). This new ungrouped approach, which has conceptual similarities with using the Gini coefficient to measure economic inequalities, rejects the fundamental premise accepted by most experts in the field that individuals should be categorized according to a priori markers of underlying social advantage. This new approach would, for example, compare health between the sickest and healthiest in a society, but not between the poorest and the richest or between those in historically disenfranchised and in the dominant racial/ethnic groups. Using this approach to calculate estimates of inequality in each country, the *World Health Report 2000* ranked 107 countries according to inequality in infant mortality. (See below for a critique of this approach.)

Because attention to "health disparities" in the United States has typically been focused on racial/ethnic differences in health or health care, standard measurement approaches have involved comparing other racial/ethnic groups to Whites or non-Hispanic/Latino Whites, i.e., persons of primarily European origin (82). In the U.S. research literature examining socioeconomic disparities, populations have generally been categorized according to income or educational attainment, comparing all other groups with the highest income/education group. The "index of dissimilarity" (ID) has been proposed by some authors (86) to measure the magnitude of disparities across diverse kinds of groups, including racial/ethnic, socioeconomic, and other groups. The ID for a given health indicator sums differences between rates in each subgroup and the overall population rate, expressing the total as a percentage of the overall population rate. As noted earlier, using the overall (average) population rate as the reference is problematic, particularly when a large proportion of the population is very disadvantaged. The U.S. National Center for Health Statistics (49) appears recently to have rejected such comparisons in favor of using the group with the most favorable rate of a given health indicator as the reference point for measuring disparities, noting that "the 'best' . . . group rate is theoretically achievable by other groups" (49). This approach avoids the potentially politically sensitive process of a priori identifying social groups as "most" or "least" advantaged. However, it leaves open the possibility that resources earmarked for health equity/disparities may be directed to groups who are more privileged overall but happen to do worse on a particular outcome.

## A PROPOSED DEFINITION TO GUIDE MEASUREMENT

The examples and arguments presented in this paper indicate the need for a definition of health disparities/inequalities/equity that explicitly specifies both the relevance of social position (relative advantage and disadvantage in social hierarchies) and the particular kinds of comparisons that should be made between/among groups with different social positions. The definition proposed here (along with a briefer variant for wider use) reflects earlier work by the author and S. Gruskin (9, 12, 13); its rationale (presented below) is based on judgments about strengths and weaknesses of previous definitions (discussed in the preceding text and tables).

As stated in Table 4, a “health disparity/inequality” is a particular type of potentially avoidable difference in health or in important influences on health that can be shaped by policies; it is a difference in which a disadvantaged social group or groups (such as the poor, racial/ethnic minorities, women, or other groups

**TABLE 4** Proposed definitions of health disparities/inequalities and equity in health<sup>a</sup>

Full version: A health disparity/inequality is a particular type of difference in health or in the most important influences on health that could potentially be shaped by policies; it is a difference in which disadvantaged social groups (such as the poor, racial/ethnic minorities, women, or other groups that have persistently experienced social disadvantage or discrimination) systematically experience worse health or greater health risks than more advantaged groups

Briefer version: Health disparities/inequalities are potentially avoidable differences in health (or in health risks that policy can influence) between groups of people who are more and less advantaged socially; these differences systematically place socially disadvantaged groups at further disadvantage on health

Key points of clarification:

Pursuing health equity means pursuing the elimination of such health disparities/inequalities

Health disparities/inequalities include differences between the most advantaged group in a category (e.g., the wealthiest) and all others, not only between the best- and worst-off groups

Social advantage means one’s relative position in a hierarchy determined by wealth, power, and/or prestige

Strengths

Guides measurement and hence facilitates accountability

Fairness/justice are not open to interpretation

Does not require determining whether any specific difference is unjust or unfair, which may be difficult or impossible

Include disparities in the determinants of health

Specify potentially modifiable differences

Incorporates Starfield’s (98) notion of systematic differences

Weaknesses

Full version is lengthy and complex; not well suited for nontechnical audiences

<sup>a</sup>Updated from Braveman & Gruskin 2003 (13).

who have persistently experienced social disadvantage or discrimination in the past) systematically experience worse health or greater health risks than the most advantaged social groups. Such differences are particularly unjust because they put groups of people who are already at a disadvantage in society—for example, because they were born into poor families, belong to a particular racial/ethnic group, or are women—at further disadvantage with respect to their health, which in turn is essential for well-being and for escaping from social disadvantage. Important influences on health that can be shaped by policies include but are not limited to health care; they also include living and working conditions.

In more technical terms, health disparities are systematic, potentially avoidable differences in health—or in the major socially determined influences on health—between groups of people who have different relative positions in social hierarchies according to wealth, power, or prestige. Because these differences adversely affect the health or health risks (construed here as exposures and vulnerabilities increasing the likelihood of ill health or adverse social consequences of ill health) of groups already at a disadvantage by virtue of their underlying social positions, they are particularly unfair. In settings where less technical detail is required or desirable, “health disparities/inequalities” may be defined more briefly as differences in health (or in important influences on health) that are systematically associated with being socially disadvantaged (e.g., being poor, a member of a disadvantaged racial/ethnic group, or female), putting those in disadvantaged groups at further disadvantage. Further clarification may be provided by noting that pursuing health equity—that is, striving to eliminate health disparities strongly associated with social disadvantage—can be thought of as striving for equal opportunities for all social groups to be as healthy as possible, with selective focus on improving conditions for those groups who have had fewer opportunities. Drawing upon human rights concepts (12, 13), pursuing health equity means removing obstacles for groups of people—such as the poor, disadvantaged racial/ethnic groups, women, or persons who are not heterosexual—who historically have faced more obstacles to realizing their rights to health and other human rights.

The proposed definition refers to differences between social groups that have different levels of underlying social advantage or disadvantage. Another term for social advantage/disadvantage is social position, i.e., one’s position within social hierarchies. Virtually everywhere in the world, social position varies according to economic resources, power or control, and prestige or social standing. These often are reflected by income; accumulated wealth; education; occupational characteristics; residential location (e.g., rural vs urban; less advantaged neighborhoods, villages, districts, and/or provinces); racial/ethnic, tribal, or religious group or national origin; and gender, with women disadvantaged on power, wealth, and/or prestige almost everywhere. In many societies the elderly and/or children are disadvantaged by policies or traditions. The biological constraints posed by physical or mental disability are often compounded by social exclusion or marginalization based on neglect, rather than deliberate discrimination, as well as by stigma. In most societies, sexual orientation is another basis for social

advantage or disadvantage, with those other than heterosexuals often marginalized and stigmatized.

The proposed definition refers to differences in health or in the most important influences on health that can be shaped by policies. Health refers to the full range of aspects of health status itself—not only morbidity and mortality but functional status or disability, suffering, and quality of life; it refers to physical health (including dental as well as medical conditions) and mental health.

The public, policy-makers, and health professionals often assume that the solution to health disparities/inequalities is in eliminating disparities in health care. Disparities should be addressed in medical, dental, and mental health care that is considered likely—according to the best available evidence and judgment—to improve health, including by decreasing suffering or improving functional status. Disparities should be investigated in all aspects of health care, including the allocation of resources for health care, the actual receipt (utilization) of services, their quality, and how they are financed, particularly with respect to the burden of payment on individuals or households.

However, the influences on health also include a range of conditions in homes, neighborhoods, workplaces, and communities that, based on the best available evidence and judgment, are likely to affect health. The rationale for including nonmedical determinants of health is that both ethical and human rights principles both call for equal opportunities for all people to be as healthy as possible, not merely using medical care to buffer the health-damaging effects of underlying unjust living conditions. In addition, the determinants of health that would be appropriate to measure include conditions that produce different serious consequences of illness for different groups of people; for example, the consequences of a given illness in someone with full health insurance coverage and sick leave could be very different from the sequellae of the same illness in someone without those social protections, whose family could be plunged into poverty with its additional deleterious health effects.

There may be disputes at times about the extent to which a given condition could be influenced by policies. For example, some people might argue that it is impossible to enact policies in the United States that redistribute resources in favor of less advantaged groups, given this country's deep-rooted ethos regarding individual responsibility and entrepreneurship. Also often cited is the relative lack of tradition of social solidarity in the United States, reflected by, for example, universal health care coverage taken for granted in Western European nations. Others might argue that some differences—e.g., disparities in health between the elderly and younger adults—that are widely considered impossible to influence by policies could indeed be ameliorated through emerging technological solutions, including genetic manipulations.

## The Values Underlying the Proposed Definition

**ETHICS AND HEALTH DISPARITIES/EQUITY** This section explores the social values underlying the proposed definition of health disparities, with particular emphasis



on how these values relate to the work of John Rawls and Amartya Sen. “Justice”—and more specifically “distributive justice,” which concerns the equitable allocation of resources in a society—is a standard ethical principle (87) that generally receives little attention in medical ethics. The late political philosopher John Rawls (88, 89) and others (3, 19, 26–28, 77, 87) have focused on distributive justice, however. Calling for an egalitarian approach, some have argued that, because health is essential for realizing one’s full potential in all domains of life, health care (and, for some authors, other key determinants of health) should not be treated as luxuries or market goods like caviar, yachts, or designer clothes. Rawls argued that priority should be given to improving the situation of the most disadvantaged in a society; he also argued that an egalitarian distribution of resources for the essentials of life (such as health) could be justified by considering what the prevailing rules for distribution of such resources would be—according to need—if they were chosen behind a “veil of ignorance” about whether individuals had been born into socially advantaged or disadvantaged families. Nobel prize–winning economist Amartya Sen ventured into the realm of ethical theory when he advanced the notion that human development should be measured not in economic terms but in terms of human capability to freely pursue quality of life, with health being one of the best indicators of that capability (93).

HEALTH DISPARITIES, HEALTH EQUITY, AND HUMAN RIGHTS<sup>1</sup> The foundations for the definition of health disparities proposed here—and the rationale for addressing these disparities to pursue health equity—come not only from ethics but also from the field of international human rights. Human rights are that set of rights or entitlements that all people in the world have, regardless of who they are or where they live. When we encounter the term “human rights,” most of us think of civil and political rights such as freedoms of assembly and speech and freedom from torture and cruel or arbitrary punishment. However, human rights also encompass economic, social, and cultural rights, such as the right to a decent standard of living, which in turn encompasses rights to adequate food, water, shelter, and clothing requisite for health, as well as the right to health itself. International human rights agreements also include the right to participation in one’s society and the right to dignified as well as safe working conditions. By now, almost every country in the world has signed one or more agreements that include important health-related rights.

A cross-cutting and key human rights principle with particular relevance to concepts of health disparities/inequalities/equity is the notion of nondiscrimination, referring to the right not to experience discriminatory treatment based on one’s social group. Specific international human rights agreements explicitly focus on what we refer to here broadly as “racial/ethnic” discrimination, encompassing

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<sup>1</sup>As noted earlier, Sofia Gruskin co-authored earlier papers in which these ideas were developed, (12, 13) and in which she played the lead role in developing the concepts related to human rights.

discrimination based not only on racial or ethnic group but also on religion, tribe, national origin, or refugee status. Other human rights agreements address rights of women and children (68). Because the most influential groups (e.g., the dominant racial/ethnic group, men, adults) have sometimes questioned whether minority racial/ethnic groups, women, and/or children are indeed disadvantaged and hence in need of special measures to protect their rights, the existence of agreements that explicitly focus on these groups, recognizing them as historically disadvantaged, has had important practical implications globally. Despite obvious challenges in implementation, human rights principles provide a universally recognized frame of reference for initiatives to reduce health disparities between more and less advantaged social groups. This frame of reference could be important in the United States as well, in defending the rationale for affirmative action to rectify historic disparities between racial/ethnic and gender groups that impact health and/or health care, for example.

The right to health is a cornerstone underlying efforts to reduce health disparities. The World Health Organization's constitution (113) defined the right to health as the right of everyone to enjoy the highest possible level of health. Although this definition has been criticized for being vague and difficult to operationalize, S. Gruskin and I (13) have proposed that the right to health can be operationalized as the right of all social groups (defined by social position) to attain the level of health enjoyed by the most privileged group in society. The right to health thus provides the basis for comparing the health experienced by different social groups, always using the most privileged group in a given category—that is, the group with the highest position in a social hierarchy based on wealth, power, and/or prestige—as the reference group.

### **What Does the Proposed Definition Contribute that is New, and What Are Its Limitations?**

In many if not most nonacademic settings, Whitehead's clear and straightforward definition of health disparities—as differences in health that are avoidable, unjust, and unfair—is likely to convey the key concepts. As noted above, however, the terms “injustice” and “unfairness” and also, to some extent, “avoidability” are open to widely varying interpretations, and this ambiguity can be problematic. For example, while most people in the United States and Europe believe it is unjust and unfair for women not to be able to vote, to be required to be veiled in public, and to be excluded from full economic and political participation in their societies, in some other countries these circumstances are viewed by the ruling groups as appropriate, just, and fair in light of women's unique (and, they would claim, valued) role in society. Given a long history of racial/ethnic and gender discrimination that has systematically put people of color at a disadvantage in multiple spheres of life, many in the United States believe that justice and fairness are served by affirmative action to increase racial/ethnic and gender diversity in professional positions; others, including some vocal members of the underrepresented groups,

feel that such efforts are unjust and unfair, constituting “reverse discrimination” that disadvantages men and people of European American origin.

It may not always be possible to determine whether a given difference in health or health risks is unfair or unjust in itself. For example, because the causes of the black/white disparity in low birth weight are mostly unknown, we cannot say whether that difference itself is unfair or unjust. However, applying the proposed definition, the black/white disparity in low birth weight does qualify as a “health disparity” deserving special attention because it is an important health difference that adversely affects an a priori disadvantaged social group, compounding their disadvantage. The goal of equity would dictate that since the causes are unknown, intensive research to uncover the causes should receive high priority.

The proposed definition specifies that differences need only be potentially or theoretically avoidable through policy interventions. One might argue, particularly in the era of genomics, that virtually all states of ill health could be avoided if sufficient resources were invested in deciphering and manipulating their genetic codes. It would be a mistake to require empiric evidence of avoidability as a prerequisite for judging whether a given difference qualifies as a disparity/inequity. In practice, the modifiability of a given difference in health or a health determinant often may be questionable, depending largely on the degree of political will that can be summoned to make the necessary policy changes.

A series of additional examples illustrates other problems with some definitions of health disparities. At a recent meeting to discuss priorities for a federally funded U.S. center on oral health disparities, it was suggested that efforts should be broadened to address unmet needs for oral health services among middle-class populations in the catchment area, rather than focusing exclusively on lower-income populations. Some have suggested that the long-standing gender disparity in life expectancy, with women in the United States and most other industrialized countries on average living several years longer than men, should become a focus for initiatives on health disparities. Although African American women with breast cancer have higher rates of mortality and shorter survival times, affluent women of European American ancestry have higher incidence rates; some have suggested that health disparity initiatives should address this racial/ethnic difference. A talk at a recent national workshop on health disparities discussed an environmental health problem in a specified region as a “disparity” based on findings that certain areas within the region were more affected than others; the only discrepancies, however, were in relation to the implementation of safety procedures, as these regional differences did not correspond to differences in social position, i.e., the most affected areas were not at greater underlying social disadvantage than the less affected areas.

In each of these (real) examples, a simpler and more intuitive definition of health disparities provides no specific basis for rejecting a course of action that would significantly dilute or even misdirect resources earmarked for reducing disparities between more and less advantaged social groups. By contrast, the proposed definition dictates that resources to address health disparities should be selectively

directed toward meeting the needs of disadvantaged groups (although not precluding the use of other available resources earmarked for public health in general to address unmet needs in more advantaged groups). In the above examples, the proposed new definition would specifically indicate that the gender disparity in life expectancy is, albeit an important public health issue, not an appropriate health disparities issue, because in this particular case it is the a priori disadvantaged group—women—who experiences better health. Similarly, the higher incidence of breast cancer among European Americans, the most advantaged racial/ethnic group in the United States, is an important general public health issue but not a health disparities issue. A talk on avoidable environmental health problems in a region, without reference to more and less privileged groups, might be of major relevance as part of a course on environmental health or environmental epidemiology but not in a course on health disparities. Health disparities/equity should not displace all other concerns, but do deserve particular attention highlighted by explicit criteria.

Perhaps the most compelling example illustrating the need for a definition that can guide measurement and accountability is the approach taken by the authors of WHO's *World Health Report 2000* (114) (80), mentioned above. While the report made a welcome argument for the importance of going beyond aggregate measures to examine how health is distributed within populations, it recommended that "health disparities" be measured by examining the distribution of health indicators across ungrouped individuals and not across preselected social groups. At first glance this approach may not seem unreasonable, in part because one might assume that the socially disadvantaged individuals in a society are also those who are least healthy. Despite being systematically disadvantaged on the vast majority of health outcomes, however, members of a particular disadvantaged group may do as well as or better than their more advantaged counterparts for particular outcomes. Defining and measuring health inequality without comparing more and less advantaged social groups, as recommended in *World Health Report 2000*, creates a potential rationale for using "health disparities" resources to focus on health outcomes with greater relevance for more advantaged social groups—in effect, neglecting health differences between more and less advantaged social groups (like the twofold black/white disparity in U.S. infant mortality) while claiming to promote "health equity." A simpler definition of health equity—without explicit focus on the role of social disadvantage in "unfairness"—cannot be used to refute the measurement approach advocated by the authors of the *World Health Report 2000* or in the examples cited above.

*Limitations of the proposed definition* In contrast to Whitehead's definition, which is brief and easily understood by those without technical backgrounds, the proposed definition of health disparities is longer, more complex, and perhaps too unwieldy for many policy-makers, the press, and the public. For nontechnical contexts when measurement issues are less pertinent, it may be appropriate to use simpler definitions, such as the following modestly expanded versions

of Whitehead's definition: health disparities reflect unequal opportunities to be healthy, making disadvantaged groups even more disadvantaged with respect to their health; correspondingly, reducing health disparities means giving disadvantaged social groups equal opportunities to be healthy. These simpler definitions resonate with the broader notion of equal opportunity to pursue well-being that has historically had relatively strong appeal in the United States.

## MEASUREMENT IMPLICATIONS: ADDITIONAL DISCUSSION

Based on the proposed definition, measuring a health disparity requires three basic components: (a) an indicator of health or a modifiable determinant of health, such as health care, living conditions, or the policies that shape them; (b) an indicator of social position, i.e., a way of categorizing people into different groups (social strata) based on social advantage/disadvantage, such as income, education, ethnic group, or gender; and (c) a method for comparing the health (or health determinant) indicator across the different social strata, such as a ratio of the rates of the health indicator in the least and most advantaged strata.

In previous publications, my colleagues and I have recommended a systematic approach to studying health disparities/equity with the aim of informing efforts to reduce the gap (9–11). The approach can be summarized in several steps: (a) Choose the health or health-related indicators of concern and categorize people into social strata, i.e., by social position. (b) Calculate rates of the health indicator in each social stratum and display this graphically. (c) Calculate rate ratios (e.g., relative risks) and rate differences to compare each stratum with the a priori most advantaged stratum that corresponds to it (e.g., all other income groups compared to the highest income group). (d) Examine changes over time in the rate ratios and rate differences; if feasible, use a summary measure to assess multiple parameters at the same time. (e) Conduct multivariate analyses in the overall sample and within strata shown to be at elevated risk compared to the most advantaged stratum, to identify particular issues warranting further attention through research or action (11).

Comparison with the most advantaged social stratum, rather than with an average level (or with the group with the best level of a particular health indicator), is based on the ethical and human rights concepts discussed earlier. The health of the most advantaged social stratum indicates a minimum level that should be biologically possible for everyone. At times, the a priori most advantaged group will not have the highest level of health on every indicator. Consequently, some have suggested that the reference group always be the stratum with the highest level of a given health indicator. However, it is a relatively rare occurrence that the most privileged stratum does not have the highest level of health (and an even more rare occurrence that the most privileged social stratum actually does poorly on a given health indicator). Furthermore, abandoning the comparison between social strata in favor of a comparison with the healthiest runs the risk posed by the approach

taken in the *World Health Report 2000*—namely, that it removes distributive justice issues from consideration and hence from the policy agenda. On balance, far more health equity-relevant information can be gained from consistently using the most privileged group as the reference for comparisons.

## FINAL COMMENTS

This paper has discussed different approaches to defining health disparities/equity and their measurement implications. At first glance, this topic may seem of primarily academic interest, with little relevance for health policy and action. However, concrete experiences have revealed that a definition can have a significant impact on policies, particularly when resources are scarce and the definition is vague. In the United Kingdom and the rest of Europe, where socioeconomic disparities in health are the paradigm for “health inequalities,” there may be less need for the rigorous measurement-oriented definition proposed here. In the United States, however, where the term “health disparities” is generally assumed to refer to racial/ethnic disparities and where many erroneously believe that such disparities are rooted in biological and/or “cultural” differences rather than underlying social disadvantage, more explicit guidance is needed. Events at the World Health Organization between 1999–2002, recounted earlier, demonstrated the potential consequences for health policy globally of widespread lack of clarity among public health researchers and leaders regarding the meaning of health disparities, inequalities, and equity.

Guidance is needed to inform measurement approaches that will be adequate not only for research on specific research questions but also for ongoing surveillance to assess the magnitude of the health gaps and how they change over time in relation to policies and conditions in all sectors that influence health. Public health surveillance is certainly not sufficient to reduce health disparities, but without monitoring how the size of disparities between more and less advantaged social groups changes over time in relation to policies, there is a lack of accountability for the differential effects of policies on vulnerable groups. We need to be clear about what we should measure and monitor and why. While epidemiology—the study of the distribution of diseases and risk factors across different populations—is concerned with health differences in general, which are important, the terms “health disparities” or “health inequalities” refer to a very specific subset of differences deemed worthy of special attention because of social values, including ethical concepts of distributive justice and core human rights principles.

## ACKNOWLEDGMENTS

Sofia Gruskin, Francois Xavier Bagnoud Center for Health and Human Rights, School of Public Health, Harvard University, coauthored earlier papers on which this paper draws heavily; in particular, the discussions of human rights issues are

derived from her major contributions. Susan Egerter provided valuable editorial assistance. Nicole Wojtal and Pinal Shah provided assistance with research and preparing the manuscript.

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## LITERATURE CITED

1. Aday LA, Fleming GV, Anderson RM. 1984. An overview of current access issues. In *Access to Medical Care in the U.S.: Who Have It, Who Don't*. 1:1–18. Chicago, IL: Pluribus Press/Univ. Chicago. 229 pp.
2. Agency for Healthcare Res. Qual. (AHRQ). US DHHS. 2003. *National Healthcare Disparities Report*. [http://www.qualitytools.ahrq.gov/disparitiesreport/download\\_report.aspx](http://www.qualitytools.ahrq.gov/disparitiesreport/download_report.aspx)
3. Anand S. 2002. The concern for equity in health. *J. Epidemiol. Community Health* 56:485–87
4. Arber S, Ginn J. 1993. Gender and inequalities in health in later life. *Soc. Sci. Med.* 36:33–46
5. Ayanian JZ, Epstein AM. 1991. Differences in the use of procedures between women and men hospitalized for coronary heart disease. *N. Engl. J. Med.* 325(4): 221–25
6. Backlund E, Sorlie PD, Johnson NJ. 1996. The shape of the relationship between income and mortality in the United States. Evidence from the National Longitudinal Mortality Study. *Ann. Epidemiol.* 6:12–20
7. Barbeau EM, Krieger N, Soobader MJ. 2004. Working class matters: socioeconomic disadvantage, race/ethnicity, gender, and smoking in NHIS 2000. *Am. J. Public Health* 94:269–78
8. Bertoni AG, Bonds DE, Lovato J, Goff DC, Brancati FL. 2004. Sex disparities in procedure use for acute myocardial infarction in the United States, 1995 to 2001. *Am. Heart J.* 147(6):1054–60
9. Braveman P. 1998. *Monitoring Equity in Health: A Policy Oriented Approach in Low and Middle Income Countries*. Equity Initiat. Pap. No. 3. Geneva: WHO. 92 pp. (WHO/CHS/HSS/98.1)
10. Braveman P. 2003. Monitoring equity in health and healthcare: a conceptual framework. *J. Health Popul. Nutr.* 21:273–87
11. Braveman P, Egerter S, Cubbin C, Marchi K. 2004. An approach to studying social disparities in health and health care. *Am. J. Public Health* 94:2139–48
12. Braveman P, Gruskin S. 2003. Poverty, equity, human rights and health. *Bull. WHO* 81:1–7
13. Braveman P, Gruskin S. 2003. Defining equity in health. *J. Epidemiol. Community Health* 57:254–58
14. Braveman P, Krieger N, Lynch J. 2000. Health inequalities and social inequalities in health. *Bull. WHO* 78:232–34
15. Braveman P, Starfield B, Geiger HJ. 2001. *World Health Report 2000: How it removes equity from the agenda for public health monitoring and policy*. *BMJ* 323: 678–81
16. Braveman P, Tarimo E. 2002. Social inequalities in health within countries: not only an issue for affluent nations. *Soc. Sci. Med.* 54:1621–35
17. Carr-Hill RA, Chalmers-Dixon P. 2002. *A review of methods for monitoring and measuring social inequality, deprivation, and health inequality*. Cent. Health Econ., Univ. York. <http://www.ihs.ox.ac.uk/sepho/publications/carrhill/>
18. Carter-Pokras O. 2002. What is a “health disparity”? *Public Health Rep.* 117:426–34

19. Chang W-C. 2002. The meaning and goals of equity in health. *J. Epidemiol. Community Health* 56:488-91
20. Clarke PM, Gerdtham U-G, Johansson M, Binglefors K, Smith L. 2002. On the measurement of relative and absolute income-related health inequality. *Soc. Sci. Med.* 55:923-28
21. Clancy CM. 2002. Gender issues in womens health care. In *Women and Health*, ed. MB Goldman, MC Hatch, pp. 50-54. San Diego: Academic. 1276 pp.
22. Cramer JC. 1995. Racial and ethnic differences in birthweight: the role of income and financial assistance. *Demography* 32:231-47
23. Cubbin C, Braveman P, Marchi K, Chavez G, Santelli J, Colley Gilbert B. 2002. Socioeconomic and racial/ethnic disparities in unintended pregnancy among postpartum women in California. *Matern. Child Health J.* 6:237-46
24. Culyer AJ, Wagstaff A. 1993. Equity and equality in health and health care. *J. Health Econ.* 12:431-57
25. Dahlgren G, Whitehead M. 1992. *Policies and Strategies to Promote Equity in Health*. Copenhagen: World Health Organization, Regional Office for Europe. 50 pp. (EUR/ICP/RPD 414(2)9866n)
26. Daniels N. 1981. Health-care needs and distributive justice. *Philos. Public Aff.* 10: 146-79
27. Daniels N. 1986. Why saying no to patients in the United States is so hard. Cost containment, justice, and provider autonomy. *N. Engl. J. Med.* 314:1380-83
28. Daniels N, Kennedy B, Kawachi I. 1999. Why justice is good for our health: the social determinants of health inequalities. *Daedalus* 128:215-52
29. Diez Roux AV, Merkin SS, Arnett D, Chambless L, Massing M, Nieto FJ, et al. 2001. Neighborhood of residence and incidence of coronary heart disease. *N. Engl. J. Med.* 345:99-106
30. Doyal L. 2000. Gender equity in health: debates and dilemmas. *Soc. Sci. Med.* 51:931-39
- 30a. Evans T, Whitehead M, Diderichsen F, Bhuiya A, eds. 2001. *Challenging Inequalities in Health: From Ethics to Action*. Oxford: Oxford Univ. Press. 348 pp.
31. Fiscella K, Franks P. 1997. Poverty or income inequality as predictor of mortality: longitudinal cohort study. *BMJ* 314:1724-28
32. Gakidou EE, Murray CJL, Frenk J. 2000. Defining and measuring health inequality: an approach based on the distribution of health expectancy. *Bull. WHO* 78(2):234-35
33. Galal OM, Qureshi AK. 1997. Dispersion index: measuring trend assessment of geographical inequality in health - The example of under-five mortality in the Middle East North African region, 1980-1994. *Soc. Sci. Med.* 44(12):1893-902
34. Geronimus AT. 1992. The weathering hypothesis and the health of African-American women and infants: evidence and speculations. *Ethn. Dis.* 2:207-21
35. Geronimus AT, Korenman S. 1993. Maternal youth or family background? On the health disadvantages of infants with teenage mothers. *Am. J. Epidemiol.* 137: 213-25
36. Graham H. 2004. Social determinants and their unequal distribution: clarifying policy understandings. *Milbank Q.* 82(1):101-24
37. Gwatkin DR. 2003. How well do health programmes reach the poor? *Lancet* 361: 540-41
38. Gwatkin DR, Guillot M, Heuveline P. 1999. The burden of disease among the global poor. *Lancet* 354:586-89
39. Inst. Med. (IOM). 2003. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington DC: Natl. Acad. Press. 764 pp.
40. Int. Soc. for Equity in Health (ISEqH). 2005 *Working Definitions*. <http://www.iseqh.org/en/workdef.htm>



41. Isaacs SL, Schroeder SA. 2004. Class—the ignored determinant of the nation's health. *N. Engl. J. Med.* 351:1137–42
42. Kakwani N. 1990. *Large Sample Distribution of Several Inequality Measures: With Application to Cote d'Ivoire*. World Bank, LSMS Work. Pap. No. 61. 34 pp.
43. Kakwani N, Wagstaff A, van Doorslaer E. 1997. Socioeconomic inequalities in health: measurement, computation, and statistical inference. *J. Econom.* 77(1):87–103
44. Kaplan GA. 1996. People and places: contrasting perspectives on the association between social class and health. *Int. J. Health Serv.* 26:507–19
45. Kaplan GA, Pamuk ER, Lynch JW, Cohen RD, Balfour JL. 1996. Inequality in income and mortality in the United States: analysis of mortality and potential pathways. *BMJ* 312:999–1005
46. Kaufman JS, Cooper RS, McGee DL. 1997. Socioeconomic status and health in blacks and whites: the problem of residual confounding and the resiliency of race. *Epidemiology* 8:621–28
47. Kawachi I, Kennedy BP, Lochner K, Prothrow-Stith D. 1997. Social capital, income inequality, and mortality. *Am. J. Public Health* 87:1491–98
48. Kennedy BP, Kawachi I, Prothrow-Stith D. 1996. Income distribution and mortality: cross sectional ecological study of the Robin Hood index in the United States. *BMJ* 312: 1004–7
49. Keppel KG, Pearcy JN, Klein RJ. 2004. *Measuring progress in Healthy People 2010*. Stat. Notes, No. 25. Hyattsville, MD: Natl. Cent. Health Stat. 15 pp.
50. Khatun M, Stenlund H, Hornell A. 2004. BRAC initiative towards promoting gender and social equity in health: a longitudinal study of child growth in Matlab, Bangladesh. *Public Health Nutr.* 7(8): 1071–79
51. Krasnik A. 1996. The concept of equity in health services research. *Scand. J. Soc. Med.* 24:2–7
52. Krieger N. 2003. Does racism harm health? Did child abuse exist before 1962? On explicit questions, critical science, and current controversies: an ecosocial perspective. *Am. J. Public Health* 93:194–99
53. Krieger N, Rowley DL, Herman AA, Avery B, Phillips MT. 1993. Racism, sexism and social class: Implications for studies of health, disease, and well-being. *Am. J. Prev. Med.* 9:82–122
54. Kunst AE, Groenhof F, Mackenbach JP, Health EW. 1998. Occupational class and cause specific mortality in middle aged men in 11 European countries: comparison of population-based studies. *BMJ* 316:1636–42
55. Kunst AE, Mackenbach JP. 1994. International variation in the size of mortality differences associated with occupational status. *Int. J. Epidemiol.* 23(4):742–50
56. Kunst AE, Mackenbach JP. 1994. *Measuring Socioeconomic Inequalities in Health*. Copenhagen: WHO, Reg. Off. Eur. (EUR/ICP/RPD 416 12234). 115 pp.
57. Lantz PM, House JS, Lepkowski JM, Williams DR, Mero RP, Chen J. 1998. Socioeconomic factors, health behaviors, and mortality: results from a nationally representative prospective study of US adults. *JAMA* 279:1703–8
58. Link BG, Phelan J. 1995. Social conditions as fundamental causes of disease. *J. Health Soc. Behav.* extra issue: 80–94
59. Lynch JW, Everson SA, Kaplan GA, Salonen R, Salonen JT. 1998. Does low socioeconomic status potentiate the effects of heightened cardiovascular responses to stress on the progression of carotid atherosclerosis? *Am. J. Public Health* 88:389–94
60. Lynch JW, Smith GD, Kaplan GA, House JS. 2000. Income inequality and mortality: importance to health of individual income, psychosocial environment, or material conditions. *BMJ* 320:1200–4
61. Macinko J, Starfield B. 2002. Annotated bibliography on equity in health, 1980–2001. *Int. J. Equity Health* 1(1):1–20.

- <http://www.equityhealthj.com/content/1/1/1>
62. Macintyre S, Ellaway A, Der G, Ford G, Hunt K. 1998. Do housing tenure and car access predict health because they are simply markers of income or self esteem? A Scottish study. *J. Epidemiol. Community Health* 52:657–64
  63. Macintyre S, Ford G, Hunt K. 1999. Do women 'over-report' morbidity? Men's and women's responses to structured prompting on a standard question on long standing illness. *Soc. Sci. Med.* 48:89–98
  64. Macintyre S, McKay L, Der G, Hiscock R. 2003. Socio-economic position and health: what you observe depends on how you measure it. *J. Public Health Med.* 25:288–94
  65. Mackenbach JP, Kunst AE. 1997. Measuring the magnitude of socioeconomic inequalities in health: an overview of available measures illustrated with two examples from Europe. *Soc. Sci. Med.* 44:757–71
  66. Mackenbach JP, Kunst AE, Cavelaars AE, Groenhouf F, Geurts JJ. 1997. Socioeconomic inequalities in morbidity and mortality in western Europe. The EU Working Group on Socioeconomic Inequalities in Health. *Lancet* 349:1655–59
  67. Mackenbach JP, Kunst AE, Groenhouf F, Borgan JK, Costa G, Faggiano F, et al. 1999. Socioeconomic inequalities in mortality among women and among men: an international study. *Am. J. Public Health* 89:1800–6
  68. Mann JM, Gruskin S, Grodin MA, Annas GJ, eds. 1999. *Health and Human Rights: A Reader*. New York: Rutledge. 505 pp.
  69. Manor O, Matthews S, Power C. 1997. Comparing measures of health inequality. *Soc. Sci. Med.* 45(5):761–71
  70. Marmot M. 2001. Inequalities in health. *N. Engl. J. Med.* 345:134–36
  71. Marmot MG, Bosma H, Hemingway H, Brunner E, Stansfeld S. 1997. Contribution of job control and other risk factors to social variations in coronary heart disease incidence. *Lancet* 350:235–39
  72. Marmot MG, Smith GD, Stansfeld S, Patel C, North F, et al. 1991. Health inequalities among British civil servants: the Whitehall II study. *Lancet* 337:1387–93
  73. McDonough P, Duncan G, Williams D, House J. 1997. Income Dynamics and Adult mortality in the United States, 1972 through 1989. *Am. J. Public Health* 87:1476–83
  74. McIntyre D, Muirhead D, Gilson L. 2002. Geographic patterns of deprivation in South Africa: informing health equity analyses and public resource allocation strategies. *Health. Policy. Plan.* 17 Suppl.:30–39
  75. Merriam-Webster Online Dictionary. 2005. *Disparity*. <http://www.m-w.com>
  76. Mooney G. 1983. Equity in health care: confronting the confusion. *Eff. Health Care* 1:179–85
  77. Mooney G. 1987. What does equity in health mean? *World. Health. Stat. Q.* 40:296–303
  78. Moss NE. 2002. Gender equity and socioeconomic inequality: a framework for the patterning of women's health. *Soc. Sci. Med.* 54:649–61
  79. Muntaner C, Nieto FJ, O'Campo P. 1997. Additional clarification re: "The Bell curve: on race, social class, and epidemiologic research". *Am. J. Epidemiol.* 146: 607–8
  80. Murray CJL, Gakidou EE, Frenk J. 1999. Health inequalities and social group differences: what should we measure? *Bull. WHO* 77:537–43
  81. Natl. Inst. Health (NIH). 2005. *Addressing disparities: the NIH program of action. What are health disparities?* <http://healthdisparities.nih.gov/whatare.html>
  82. Natl. Res. Coun. 2004. Introduction. In *Eliminating Health Disparities: Measurement and Data Needs*, Panel on DHHS Collection of Race and Ethnicity Data, ed.

- M Verploeg, E Perrin, 1:14–20. *Comm. Natl. Stat., Div. Behav. Soc. Sci. Educ.* Washington, DC: Natl. Acad. Press. 294 pp.
83. Nicolaidis C, Ko CW, Saha S, Koepsell TD. 2004. Racial discrepancies in the association between paternal vs. maternal educational level and risk of low birth-weight in Washington State. *BMC Pregnancy Childbirth* 4:10
84. Ostlin P, Sen G, George A. 2001. Gender, health and equity. See Ref. 30a, 13:174–89
85. Pappas G, Queen S, Hadden W, Fisher G. 1993. The increasing disparity in mortality between socioeconomic groups in the United States, 1960 and 1986. *N. Engl. J. Med.* 329:103–9
86. Pearcy JN, Keppel KG. 2002. A summary measure of health disparity. *Public Health Rep.* 117:273–80
87. Peter F, Evans T. 2001. Ethical dimensions of health equity. See Ref. 30a, 3:24–33
88. Rawls J. 1971. *A Theory of Justice*. Cambridge, MA: Belknap/Harvard Univ. Press. 560 pp.
89. Rawls J. 1985. Justice as fairness: political not metaphysical. *Philos. Public Aff.* 14(3):223–51
90. Ross CE, Wu C-L. 1995. The links between education and health. *Am. Sociol. Rev.* 60:719–45
91. Schulman KA, Berlin JA, Harless W, Kerner JF, Sistrunk S, et al. 1999. The effect of race and sex on physicians' recommendations for cardiac catheterization. *N. Engl. J. Med.* 340:618–26
92. Sen A. 1984. Family and food: sex bias in poverty. In *Resources, Values and Development*, ed. A. Sen, pp. 346–68. Cambridge, MA: Harvard Univ. Press. 547 pp.
93. Sen A. 1999. *Development as Freedom*. New York: Anchor Books. 366 pp.
94. Standing H. 1997. Gender and equity in health sector reform programmes: a review. *Health Pol. Plan.* 12(1):1–18
95. Smith GD, Hart C. 2002. Life-course socioeconomic and behavioral influences on cardiovascular disease mortality: the collaborative study. *Am. J. Public Health* 92:1295–98
96. Stafford M, Cummins S, Macintyre S, Ellaway A, Marmot M. 2005. Gender differences in the associations between health and neighbourhood environment. *Soc. Sci. Med.* 60:1681–92
97. Standing H. 1997. Gender and equity in health sector reform programmes: a review. *Health Policy Plan.* 12(1):1–18
98. Starfield B. 2001. Improving equity in health: a research agenda. *Int. J. Health Serv.* 31:545–66
99. Szwarwald CL. 2002. On the World Health Organisation's measurement of health inequalities. *J. Epidemiol. Community Health* 56:177–82
100. US DHHS. 2000. Health people 2010 goals. In *Healthy People 2010: Understanding and Improving Health*, pp. 8–16. Washington, DC: US GPO. 74 pp. 2nd ed.
101. Von dem Knesebeck O, Luschen G, Cockerham WC, Siegrist J. 2003. Socioeconomic status and health among the aged in the United States and Germany: a comparative cross-sectional study. *Soc. Sci. Med.* 57:1643–52
102. Wagstaff A. 2002. *Inequality aversion, health inequalities, and health achievement*. World Bank–Dev. Res. Group. World Bank Policy Res. Work. Pap. No. 2765. <http://ssrn.com/abstract=634478>
103. Wagstaff A, Paci P, van Doorslaer E. 1991. On the measurement of inequalities in health. *Soc. Sci. Med.* 33:545–57
104. Wagstaff A, van Doorslaer E, Paci P. 1991. Horizontal equity in the delivery of health care. *J. Health Econ.* 10:169–205
105. Webster P. 2005. Minority health care remains a problem for Canada's leaders. *Lancet* 365:1531–32
106. Whitehead M. 1990. *The Concepts and Principles of Equity in Health*. Copenhagen: WHO, Reg. Off. Eur. (EUR/ICP/RPD 414 7734r). 29 pp.

107. Whitehead M. 1992. The concepts and principles of equity in health. *Int. J. Health Serv.* 22:429–45
108. Williams DR. 1999. Race, socioeconomic status, and health: the added effects of racism and discrimination. *Ann. NY Acad. Sci.* 986:173–88
109. Williams DR, Collins C. 2001. Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Rep.* 116:404–16
110. Wilkinson RG. 1997. Socioeconomic determinants of health. Health inequalities: relative or absolute material standards? *BMJ* 314:591–95
111. Winkleby MA, Jatulis DE, Frank E, Fortmann SP. 1992. Socioeconomic status and health: how education, income, and occupation contribute to risk factors for cardiovascular disease. *Am. J. Public Health* 82:816–20
112. World Bank. *Quantitative Techniques for Health Equity Analysis: Technical Notes*. [http://web.worldbank.org/WBSITE/EXT](http://web.worldbank.org/WBSITE/EXT/ERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTPAH/0,contentMDK:20216933~menuPK:460204~pagePK:148956~piPK:216618~theSitePK:400476,00.html)
113. World Health Organ. 1946. *Constitution of the World Health Organization* as adopted by the International Health Conference, New York 19–22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Off. Rec. WHO No. 2) and entered into force on 7 April 1948
114. World Health Organ. 2000. *World Health Report 2000*. Geneva: WHO. 206 pp.
115. World Health Organ. (WHO)/Braveman P, Tarimo E, Creese A, Monasch R, Nelson L. 1996. *Equity in Health and Health Care: A WHO/SIDA Initiative*. Geneva: WHO. 51 pp. (WHO/ARA/96.1)
116. Yen IH, Syme SL. 1999. The social environment and health: a discussion of the epidemiologic literature. *Annu. Rev. Public Health* 20:287–308



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**ERRATA**

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