Chapter 14

# Social inequalities in health

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## Introduction

Teaching about social inequalities in health is fundamental to epidemiology. The first reason is substantive: social injustice harms health (Krieger 1999; Krieger 2004). Understanding how we embody inequality, and what can be done to prevent this, is key to the mission of both epidemiology and public health overall. The second reason is methodological: health inequities affect the conduct of rigorous science, whether or not the focus of the research is on social inequalities in health per se (Krieger 2008). Epidemiologic evidence, whether experimental or observational, can be rendered invalid by socially patterned selection bias, confounding, and misclassification (Davey Smith 2003; Krieger 2007a). We ignore these issues at our peril—with life-and-death consequences for the public's health.

In this chapter, I offer guidelines for teaching an introductory epidemiological course on social inequalities in health. My approach is partly based on teaching, for the past fifteen years, a US graduate-level public health course on 'History, politics, and public health: theories of disease distribution and social inequalities in health' (SHH215, Harvard School of Public Health [HSPH]) (Krieger 2007b). Also relevant is my etiological, methodological, and theoretical work as a social epidemiologist concerned with analyzing, monitoring, and addressing health inequities. My perspective, which emphasizes critical learning, is grounded in ecosocial theory. This theory of disease distribution, which I first proposed in 1994 (Krieger 1994) and have elaborated since (Krieger 2001a; Krieger 2004; Krieger 2008), is fundamentally concerned with health inequities, the relevance of history, biology, and society for epidemiologic thinking, and socially responsible science.

## Teaching objectives

The potential scope of an introductory course on social inequalities in health is enormous, given the range of substantive, conceptual, and methodological topics that could be covered. Moreover, a class on this topic could be taught not only to graduate students in the health professions but also in other disciplines (e.g., sociology, anthropology, policy, etc.) and to students at other levels (e.g., undergraduate). It could, likewise, be designed for health activists and community members working to eliminate health inequities (see, for example, International People's Health University 2007; and Community-Campus Partnerships for Health 2007). Because *Teaching epidemiology* is intended for 'teachers in epidemiology, public health, and clinical

medicine', however, my chapter proposes a graduate-level sixteen-session introductory course.

As a starting point, when teaching epidemiologists and other health professionals, I have found it more fruitful pedagogically to work with students first for conceptual clarity on the substantive questions (e.g., what are health inequities and what causes them), and then address the methodological issues raised by trying to answer these questions empirically and testing the relevant hypotheses. For this reason, I suggest that an introductory course on social inequalities in health focus primarily on definitional and conceptual issues, and secondarily on methodological concerns. A follow-up course on methods for studying health inequities would be a logical successor.

Based on these considerations, Table 14.1 provides a sample course description and set of learning objectives. Because the proposed class is meant to be global in reach, and easily adaptable to whatever country-context in which it is taught, the course description does not focus on a particular country or geographic area. Where appropriate, however, case examples should be drawn from the country focus of the course, to bring home the issue of health inequities to the enrolled students.

It would, of course, be possible to design separate introductory epidemiologic courses for any of the areas addressed by the proposed class, e.g. on theories of disease distribution for studying health inequities, on class and health, or racism and health, or gender and health, or sexuality and health, or the geography or history of health inequities, etc. While these more focused types of introductory courses are needed (and do exist), an introductory course that integrates material on a wide range of health inequities, to make clear their interconnections, similarities, and differences, is essential. After all, our bodies daily integrate and embody our societal and ecological context (Krieger 1994; Krieger 2004); our teaching (and research) should do no less.

The learning objectives provided in Table 14.1 build on the course description and clarify the specific knowledge and skills that students should obtain as a result of having taken the class. The emphasis on students gaining a critical perspective and acquiring the capacity to engage in debates stems from my pedagogic orientation. Students learn best when they are encouraged to be active and questioning learners, not passive consumers of received knowledge (Friere 1970). The real world of scientific inquiry is fraught with unanswered questions, conceptual and methodological debates, and contending perspectives. Students need to be trained to enter this world, equipped with relevant conceptual tools, substantive knowledge, and the ability to challenge dogma and debate ideas.

## Teaching content

The course content, presented in outline form in Table 14.2 and described in more detail below, flows from the course objectives. Table 14.3 provides a brief guide to key concepts the course should cover, and Table 14.4 lists fifteen suggested readings.

### Session 1: what are 'social inequalities in health? Definitions and debates

This first session should address what is even meant by the phrase 'social inequalities in health' (see Table 14.3). It should likewise clarify that because the focus of the

**Table 14.1** Course description and learning objectives for proposed introductory course on social inequalities in health

**Course description:**

This 16-session course is an introduction to the epidemiology of social inequalities in health. It is intended to provide a critical understanding of what health inequities are and why they matter—for the lives of those burdened by health inequities and for the rigour of epidemiologic research. The course will:

1. introduce definitions of and debates over the meaning of 'social inequalities in health';
2. briefly review historical dimensions of health inequities, to give context to current trends;
3. introduce key theoretical perspectives that guide epidemiologic research on health inequities (e.g., social production of disease/political economy of health, neo-materialist, psychosocial, lifecourse, and ecosocial);
4. define key dimensions of health inequities within and between countries, especially in relation to class, racism, gender, sexuality, and global politics;
5. critically review epidemiologic research on these different—and interconnected—dimensions of health inequities, taking into account etiologic pathways by which inequality is embodied, in relation to both level and lifecourse; and
6. consider debates over whether it is 'politically correct'—or correct and necessary—for epidemiologists to pay attention to links between social inequality and health, as either a primary research focus or in investigations not directly concerned with health inequities.

**Learning objectives:**

The overall goal is for students to develop a critical understanding of 'social inequalities in health' and why they matter. By the end of the course, students will be able to:

1. define what is meant by 'social inequalities in health', and discuss debates about its meaning;
2. describe different theoretical frameworks epidemiologists use to study health inequities;
3. describe key aspects of different domains of health inequities covered, singly and combined: who is affected, compared to whom? what are the trends over time, overall and for specific outcomes? what are the pathways of embodiment? and how can epidemiologists measure and analyze the relevant exposures, in relation to both level and lifecourse?
4. debate whether epidemiologists need to be concerned about health inequities on both substantive and methodological grounds—if so, why; if not, why not.

course is on health inequities—that is, how social inequality shapes population health—other causes of disease and disease distribution unrelated to inequity will be discussed only as warranted. A key concept is that the non-equivalence of health status between groups can arise in two very different ways: 1. because they are socially produced and are due to unfair and unjust societal conditions; or, 2. because they arise from variations that are not socially determined (see Table 14.3) (see: Whitehead 1992; Krieger 2005a; Braveman 2006). The former constitute what is increasingly referred to as 'health inequities' (also termed 'social inequalities in health'); the latter, simply differences in health status. For example, the fact that men get prostate cancer

**Table 14.2** Outline for proposed introductory epidemiologic course on 'social inequalities in health'

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|---|---|
| Session 1 | What are 'social inequalities in health?'—Definitions and debates |
| Session 2 | Health inequities in historical perspective: a brief review |
| Session 3 | Theoretical frameworks for epidemiologic research on health inequities |
| Session 4 | Key dimensions of health inequities within and between countries: global politics, class, racism, gender, and sexuality, in context |
| Session 5 | Levels, lifecourse, and pathways of embodiment leading to health inequities |
| Session 6 | Health inequities and social class: pathways and measurement |
| Session 7 | Health inequities and racism: pathways and measurement |
| Session 8 | Health inequities and gender: pathways and measurement |
| Session 9 | Health inequities and sexuality: pathways and measurement |
| Session 10 | Health inequities between countries and regions: pathways and measurement |
| Session 11 | Case example: epidemiologic analyses of health inequities for a particular population |
| Session 12 | Case example: epidemiologic analyses of health inequities for a particular outcome |
| Session 13 | 'Politically correct' or correct science?—The case of racism vs 'race' and health inequities |
| Session 14 | 'Politically correct' or correct science?—The case of hormone therapy, cardiovascular disease, and breast cancer |
| Session 15 | Implications of epidemiologic research on health inequities for the public's health |
| Session 16 | Who and what is accountable for social inequalities in health: summation, student projects, and course wrap-up |

but women get cervical cancer is a difference, not an inequity. By contrast, which women and which men are at high risk of being diagnosed with or dying from these diseases *can* be a matter of inequity, as evidenced by racial/ethnic and class patterns for these health outcomes (Krieger 2005a). The readings assigned for this class should review the global terminology on health inequities and the specific terminology employed in the country where the course is taught (e.g., in the US, the most widely used terminology refers to 'health disparities' (Carter-Pokras and Bacquet 2002; Krieger 2005a)).

## Session 2: health inequities in historical perspective: a brief review

The second session should provide students with an historical perspective on health inequities. This will set the basis for what the class will cover and also counter the false

**Table 14.3** Short list of key concepts: epidemiology and health inequities

| Key concept (alphabetical order) | Brief explications, excerpted from 'A glossary for social epidemiology' (Krieger 2001b) |
|---|---|
| **Biologic expressions of social inequality** | '**Biologic expressions of social inequality** refers to how people literally embody and biologically express experiences of economic and social inequality, from *in utero* to death, thereby producing social inequalities in health across a wide spectrum of outcomes. ...' [See also Krieger 2004] |
| **Discrimination** | '**Discrimination** refers to "the process by which a member, or members, of a socially defined group is, or are, treated differently (especially unfairly) because of his/her/their membership of that group" (Jary and Jary 1995: 169). This unfair treatment arises from "socially derived beliefs each [group] holds about the other" and "patterns of dominance and oppression, viewed as expressions of a struggle for power and privilege" (Marshall 1994: 125–6). ... Predominant types of adverse discrimination are based on race/ethnicity, gender, sexuality, disability, age, nationality, and religion, and, although not always recognized as such, social class ... Social epidemiologic analyses of health consequences of discrimination require conceptualizing and operationalizing diverse expressions of exposure, susceptibility, and resistance to discrimination ... recognizing that individuals and social groups may be subjected simultaneously to multiple—and interacting—types of discrimination. ...' [See also Krieger 1999; Krieger 2004; Williams and Jackson 2005] |
| **Ecosocial theory of disease distribution** | '**Ecosocial [theory]** ... seek[s] to integrate social and biologic reasoning and a dynamic, historical and ecological perspective to develop new insights into determinants of population distributions of disease and social inequalities in health. The central question for ecosocial theory is: *"who and what is responsible for population patterns of health, disease, and well-being, as manifested in present, past, and changing social inequalities in health?"* ... Core concepts for ecosocial theory ... include: (1) **embodiment** ... (2) **pathways of embodiment** ... (3) **cumulative interplay between exposure, susceptibility, and resistance** [across the lifecourse] ... (4) **accountability and agency** ...' [See also Krieger 1994; Krieger 2001a; Krieger 2008] |
| **Embodiment** | 'a concept referring to how we literally incorporate, biologically, the material and social world in which we live, from *in utero* to death; a corollary is that no aspect of our biology can be understood absent knowledge of history and individual and societal ways of living'. [See also Krieger 1994; Krieger 2005d] |

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**Table 14.3** (continued) Short list of key concepts: epidemiology and health inequities

| Key concept (alphabetical order) | Brief explications, excerpted from 'A glossary for social epidemiology' (Krieger 2001b) |
|---|---|
| **Gender, sexism, and sex** | '**Gender** refers to a social construct regarding culture-bound conventions, roles, and behaviors for, as well as relations between and among, women and men and boys and girls. ... **Sexism**, in turn, involves inequitable gender relations and refers to institutional and interpersonal practices whereby members of dominant gender groups (typically men) accrue privileges by subordinating other gender groups (typically women) and justify these practices via ideologies of innate superiority, difference, or deviance. Lastly, **sex** is a biological construct premised upon biological characteristics enabling sexual reproduction. ... Sex-linked biological characteristics (e.g., presence or absence of ovaries, testes, vagina, penis; various hormone levels; pregnancy, etc.) can, in some cases, contribute to gender differentials in health but can also be construed as **gendered expressions of biology** and erroneously invoked to explain **biologic expressions of gender**. ...' [See also Doyal 1995; Fausto-Sterling 2000; Krieger 2003a; Payne 2006] |
| **Human rights and social justice** | **Human rights**, as a concept, presumes that all people 'are born free and equal in dignity and rights' (United Nations 1948), and provides a universal frame of reference for deciding questions of equity and social justice. ... Human rights norms are premised, in the first instance, upon the 1948 Universal Declaration of Human Rights (United Nations 1948) and its recognition of the indivisibility and interdependence of civil, political, economic, social, and cultural rights. A 'health and human rights' framework thus not only spurs recognition of how realization of human rights promotes health but also helps translate concerns about how violation of human rights potentially harms health into concrete and actionable grievances which governments and the international community are legally and politically required to address. Understanding of what prompts violation of human rights and sustains their respect, protection and fulfilment is, in turn, aided by **social justice** frameworks, which explicitly analyze who benefits from—and who is harmed by—economic exploitation, oppression, discrimination, inequality, and degradation of 'natural resources' ... [See United Nations 1948; Boucher and Kelly 1998; Gruskin et al. 2005] |
| **Lifecourse perspective** | '**Lifecourse perspective** refers to how health status at any given age, for a given birth cohort, reflects not only contemporary conditions but embodiment of prior living circumstances, *in utero* onwards ...' [See also Kuh and Ben-Shlomo 2004; Davey Smith 2003] |
| **Multilevel analysis** | '**Multi-level analysis** refers to statistical methodologies, first developed in the social sciences, that analyze outcomes simultaneously in relation to determinants measured at different levels (e.g., individual, workplace, neighborhood, nation, or geographic region existing within or across geopolitical boundaries) ...' [See also Diez-Roux 2002; Subramanian et al. 2003] |

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| **Poverty, deprivation (material and social), and social exclusion** | 'To be **impoverished** is to lack or be denied adequate resources to participate meaningfully in society. A complex construct, **poverty** is inherently a normative concept that can be defined—in both absolute and relative terms—in relation to: "need", "standard of living", "limited resources", "lack of basic security", "lack of entitlement", "multiple deprivation", "exclusion", "inequality", "class", "dependency", and "unacceptable hardship" (Gordon and Spicker 1999) ... **Deprivation** can be conceptualized and measured, at both the individual and area level, in relation to: **material deprivation**, referring to "dietary, clothing, housing, home facilities, environment, location and work (paid and unpaid)", and **social deprivation**, referring to rights in relation to "employment, family activities, integration into the community, formal participation in social institutions, recreation and education" (Townsend 1993: 93) ... **Social exclusion**, another term encompassing aspects of poverty, in turn focuses attention on not only the impact but also the process of marginalization ...' [See also Krieger et al. 1997; Shaw et al. 2007] |
| **Psychosocial epidemiology** | 'A **psychosocial** framework directs attention to both behavioral and endogenous biological responses to human interactions ...' [See also Marmot 2004] |
| **Race/ethnicity and racism** | '**Race/ethnicity** is a social, *not* biological, category, referring to social groups, often sharing cultural heritage and ancestry, that are forged by oppressive systems of race relations, justified by ideology, in which one group benefits from dominating other groups, and defines itself and others through this domination and the possession of selective and arbitrary physical characteristics (e.g., skin color). **Racism** refers to institutional and individual practices that create and reinforce oppressive systems of race relations (see "discrimination," above). **Ethnicity**, a construct originally intended to discriminate between "innately" different groups allegedly belonging to the same overall "race", is now held by some to refer to groups allegedly distinguishable on the basis of "culture"; in practice, however, "ethnicity" cannot meaningfully be disentangled from "race" in societies with inequitable race relations, hence the construct "race/ethnicity" ...' [See also Banton 1998; Krieger 1999] |
| **Sexualities and heterosexism** | '**Sexuality** refers to culture-bound conventions, roles, and behaviors involving expressions of sexual desire, power, and diverse emotions, mediated by gender and other aspects of social position (e.g., class, race/ethnicity, etc.). Distinct components of sexuality include: sexual identity, sexual behavior, and sexual desire. Contemporary "Western" categories by which people self-identify or can be labeled include: heterosexual, homosexual, lesbian, gay, bisexual, "queer", transgendered, transsexual, and asexual. **Heterosexism**, the type of discrimination related to sexuality, constitutes one form of abrogation of sexual rights and refers to institutional and interpersonal practices whereby heterosexuals accrue privileges (e.g., legal right to marry and to have sexual partners of the "other" sex) and discriminate against people who have or desire same-sex sexual partners, and justify these practices via ideologies of innate superiority, difference, or deviance ...' [See also Parker and Gagnon 1995; Meyer and Northridge 2007] |

*(Continued)*

**Table 14.3** (continued) Short list of key concepts: epidemiology and health inequities

| Key concept (alphabetical order) | Brief explications, excerpted from 'A glossary for social epidemiology' (Krieger 2001b) |
|---|---|
| **Society, social, societal, and culture** | '**Society**, originally meaning "companionship or fellowship", now stands as "our most general term for the body of institutions and relationships within which a relatively large group of people live and as our most abstract term for the condition in which such institutions and relationships are formed" (Williams 1983: 291). **Social**, as an adjective, likewise has complex meanings: "as a descriptive term for *society* in its now predominant sense of the system of common life," and also as "an emphatic and distinguishing term, explicitly contrasted with *individual* and especially *individualist* theories of society" [italics in the original] (Williams 1983: 286). **Societal**, in turn, serves as a "more neutral reference to general **social** formations and institutions" (Williams 1983: 294). By this logic, **social epidemiology** and its social theories of disease distribution stand in contrast to **individualistic epidemiology**, which relies on individualistic theories of disease causation ... **Culture**, originally a "noun of process" referring to "the tending of something, basically crops or animals" (Williams 1983: 87), presently has three distinct meanings: "(i) the independent and abstract noun which describes a general process of intellectual, spiritual, and aesthetic development ...; (ii) the independent noun, whether used generally or specifically, which indicates a particular way of life, whether of a people, a period, a group, or humanity in general; and ... (iii) the independent and abstract noun which describes the work and practices of intellectual and especially artistic activity" (Williams 1983: 90). In social epidemiology, meaning (ii) predominates ...' |
| **Social class and socioeconomic position** | '**Social class** refers to social groups arising from interdependent economic relationships among people. These relationships are determined by a society's forms of property, ownership, and labor, and their connections through production, distribution, and consumption of goods, services, and information ... Class, as such, is not an a priori property of individual human beings, but is a social relationship created by societies. As such, social class is logically and materially prior to its expression in distributions of occupations, income, wealth, education, and social status. One additional and central component of class relations involves an asymmetry of economic exploitation, whereby owners of resources (e.g., capital) gain economically from the labor or effort of non-owners who work for them ... **Socioeconomic position,** in turn, is an aggregate concept that includes both resource-based and prestige-based measures, as linked to both childhood and adult social class position. ... The term "socioeconomic status" should be eschewed because it arbitrarily (if not intentionally) privileges "status"—over material resources—as the key determinant of socioeconomic position. ...' [See also Krieger et al. 1997; Wright 1997; Shaw et al. 2007] |

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|---|---|
| **Social determinants of health** | '**Social determinants of health** refer to both specific features of and pathways by which societal conditions affect health and that potentially can be altered by informed action. ...' [See also Wilkinson and Marmot 2006] |
| **Social inequality or inequity in health and social equity in health** | '**Social inequalities (or inequities) in health** refer to health disparities, within and between countries, that are judged to be unfair, unjust, avoidable, and unnecessary (meaning: are neither inevitable nor unremediable) and which systematically burden populations rendered vulnerable by underlying social structures and political, economic, and legal institutions. ... **Social equity in health**, in turn, refers to an absence of unjust health disparities between social groups, within and between countries. ...' [See also Whitehead 1992; Braveman 2006] |
| **Social production of disease/political economy of health** | '**Social production of disease/political economy of health** refer to related (if not identical) theoretical frameworks that explicitly address economic and political determinants of health and distributions of disease within and across societies, including structural barriers to people living healthy lives ...' [See also Doyal 1979; Navarro and Muntaner 2004] |
| **Social production of scientific knowledge** | '**Social production of scientific knowledge** refers to ways in which social institutions and beliefs affect recruitment, training, practice, and funding of scientists, thereby shaping what questions we, as scientists, do and do not ask, the studies we do and do not conduct, and the ways in which we analyze and interpret data, consider their likely flaws, and disseminate results ...' [See also Ziman 2000; Krieger 2004] |
| **Stress** | '**Stress**, a term widely used in the biological, physical, and social sciences, is a construct whose meaning in health research is variously defined in relationship to "stressful events, responses, and individual appraisals of situations" (Cohen et al. 1995: 3). Common to these definitions is "an interest in the process in which *environmental demands tax or exceed the adaptive capacity of an organism, resulting in psychological or biological changes that may place persons at risk for disease*" [italics in original] (Cohen et al. 1995: 3) ...' |
| **Theories of disease distribution** | '**Theories of disease distribution** seek to explain current and changing population patterns of disease across time and space and, in the case of social epidemiology, across social groups (within and across countries, over time) ...' [See also Krieger 2001a] |

Emphasis in the original.

**Table 14.4** List of fifteen suggested readings for students interested in epidemiology and health inequities

| Topic area | References (in alphabetical order) |
|---|---|
| **Social epidemiology and health inequities** | Berkman, L., and Kawachi, I., eds. (2000) *Social epidemiology*. Oxford: Oxford University Press. |
| | Davey Smith, G., ed. (2003) *Health inequalities: lifecourse approaches*. Bristol: Policy Press. |
| | Krieger, N. (1994) 'Epidemiology and the web of causation: has anyone seen the spider?' *Social Science and Medicine*, 39: 887–903. |
| | Krieger, N. (2001a) 'Theories for social epidemiology in the 21st century: an ecosocial perspective', *International Journal of Epidemiology*, 30: 668–77. |
| | Krieger, N., ed. (2004) *Embodying inequality: epidemiologic perspectives*. Amityville, NY: Baywood Publishing Company. |
| | Oakes, J. M., and Kaufman, J. S., eds. (2006) *Methods in social epidemiology*. San Francisco, CA: Jossey-Bass. |
| | Wilkinson, R., and Marmot, M., eds. (2006) *Social determinants of health: the solid facts*. 2nd edn. Oxford: Oxford University Press. |
| | Young, T. K. (1998) *Population health: concepts and methods*. Oxford: Oxford University Press. |
| **Health inequities in context** | Braveman, P. (2006) 'Health disparities and health equity: concepts and measurement', *Annual Review of Public Health*, 27: 167–94. |
| | Evans, T. et al., eds. (2001) *Challenging inequities in health: from ethics to action*. Oxford: Oxford University Press. |
| | Gruskin, S. et al., eds. (2005) *Perspectives on health and human rights*. New York: Routledge. |
| | Hofrichter, R., ed. (2003) *Health and social justice: politics, ideology, and inequity in the distribution of disease*. San Francisco: Jossey-Bass. |
| | Kunitz, S. (2006) *The health of populations: general theories and particular realities*. Oxford: Oxford University Press. |
| | Navarro, V., and Muntaner, C., eds. (2004) *Political and economic determinants of population health and well-being: controversies and developments*. Amityville, NY: Baywood Publishing Company. |
| | Porter, D. (1999) *Health, civilization and the state: a history of public health from ancient to modern times*. London: Routledge. |

impression, common to students new to this field, that epidemiologists have only recently become aware of social inequalities in health and that social epidemiology is a novel discipline. There are three key points:

1. Scholars have long recognized that ways of living and working affect health, with such observations found in the earliest known medical documents. Whether these differential risks are seen as unfair, however, depends on prevailing and contending

views about causes of social inequality (e.g., innate or imposed) (see: Porter 1999; Krieger 2000).

2. The emergence of epidemiology as a scientific discipline in the early nineteenth century was inextricably bound to concerns about destitution, as spurred by the global public health impact of that era's massive transformations in ways of living—and of dying. The Industrial Revolution and unleashing of laissez-faire capitalism sparked the creation of a fast-growing, impoverished, urban working class, massive increases in international trade and an expanding military presence in colonized countries and outposts across the five continents. These developments set the basis for unprecedented European epidemics of cholera and yellow fever, along with declining life expectancy, especially among the urban poor. Through the urgent study of these problems, epidemiology, as a self-designated field of scientific study, was born (see Porter 1999; Krieger 2000; Krieger 2007a).
3. Health inequities are historically contingent, meaning that their magnitude and specific forms of expression (for particular outcomes and also for overall measures, such as premature mortality and life expectancy) depend on particular societal conditions (Kunitz 2006). Consider, for example, changes in the association between socio-economic position and smoking: during the twentieth century, in both the US and several European countries, cigarette-smoking rates initially were higher in professional compared to working-class occupations—a trend that then reversed itself (Graham 1996; Brandt 2007).

Yet, while it is important to grasp that there is no one simple 'story' of health inequities, a general statement still holds: 1. material resources and knowledge are needed to live a healthy life; 2. social inequality results in the unfair distribution of these resources; and, 3. groups subjected to social and economic deprivation typically suffer the worst health status while groups who benefit from the social and economic systems producing these inequities tend to fare best (Krieger 2004). To highlight the relevance of these points for the students in the class, the session should include historical examples of health inequities and investigators who have researched them for the country focus of the course.

## Session 3: theoretical frameworks for epidemiologic research on health inequities

The third session should provide an introductory overview of the different theoretical frameworks epidemiologists currently use to analyze health inequities. This is because theory determines what is studied and what is ignored, using which methods, with which interpretations (see Table 14.3) (Krieger 1994; Krieger 2001a). Contending twentieth-century epidemiologic theories range from individualistic biomedical and lifestyle approaches, which emphasize individual-level biology (especially genetics) and choice as key determinants of health, to more contextualized frameworks concerned with societal determinants of health inequities (see Tesh 1988; Krieger 1994; Krieger 2001a). Among the latter, a central premise is that health inequities arise from unjust relationships between groups, not intrinsic characteristics (see Tesh 1988; Krieger 1994; Krieger 2001a).

Within these more contextualized approaches, some frameworks focus almost exclusively on the social determinants of health and leave biology relatively opaque (e.g., social production of disease/political economy of health, neo-materialism, health and human rights) (see, for example, Doyal 1979; Hofrichter 2003; Navarro and Muntaner 2004; Gruskin 2005). Others are more biologically or psychologically oriented, but do not systematically consider political economy (e.g., lifecourse, psychosocial) (see, for example, Kuh and Ben-Shlomo 2004; Marmot 2004). Still others, such as ecosocial theory (see Table 14.3 and Figure 14.1) (Krieger 1994; Krieger 2001a; Krieger 2008), call for multi-level epidemiologic theorizing conceptualized in societal, biological, ecological, and historically contingent terms (see also Susser 1996). A central concern of ecosocial theory, for example, is how population distributions of and inequities in health, disease, and well-being constitute the embodied consequences of people's societal and ecologic context, and hence both political economy and political ecology. Core constructs accordingly pertain to the process and pathways of embodiment and how they involve the interplay of social and biological exposures, susceptibility, and resistance across the lifecourse, with issues of agency and accountability referring not only to who and what is responsible for disease distribution but also how epidemiologists and other scientists study and explain these distributions (Table 14.3 and Figure 14.1). In the session discussion, students should analyze and debate the different types of etiologic hypotheses encouraged by each of these theoretical perspectives.

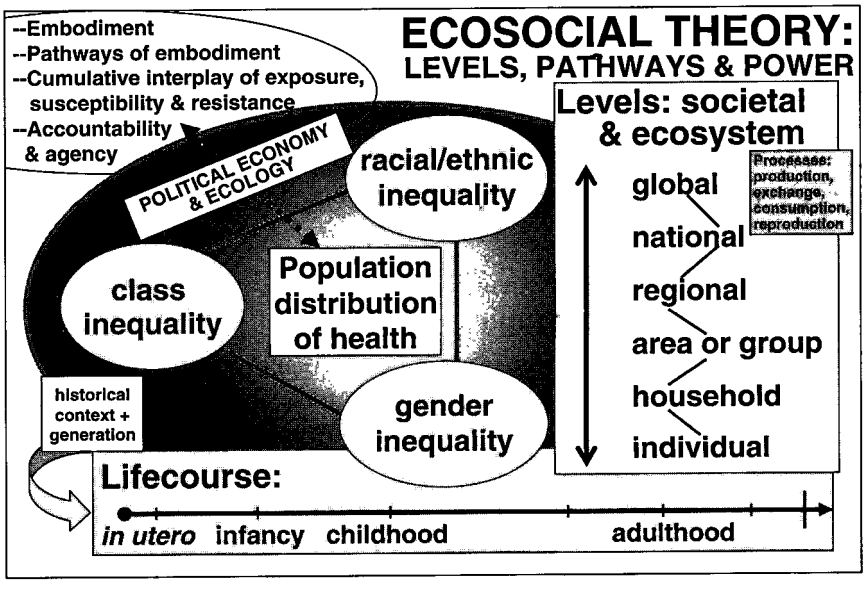


**Fig. 14.1** Embodying inequality: an ecosocial approach to analyzing disease distribution, population health, and health inequities (Krieger 1994; Krieger 2001a; Krieger 2008).

Reproduced from N. Krieger (2008) 'Proximal, distal, and the politics of causation: what's level got to do with it?' *American Journal of Public Health,* 98: 221–30.

## Session 4: key dimensions of health inequities within and between countries: global politics, class, racism, gender, and sexuality, in context

The fourth session would present a broad overview of the major types of social inequalities in health currently under investigation. These involve health inequities both within and between countries, principally in relation to global politics, class, racism, gender, and sexuality, in context (see Table 14.3). At issue is how these observed population-level biological expressions of social inequality arise due to exploitative and/or oppressive relationships between the groups co-defined by their inequitable relationships, and the impact these inequities have on the material, psychosocial, and ecosystem conditions in which people live, ail, and die (Krieger 2004). Emphasis should be on a preliminary discussion of the interconnections, similarities, and distinctions between these various types of inequity and their implications for health, noting that each type receives more in-depth focus in Sessions 6 to 10. Students interested in debates over the causes and manifestations of diverse forms of societal inequity should be referred to articles describing current and contending social science perspectives on these issues (e.g., as contained in such resources as the online *International Encyclopedia of the Social & Behavioral Sciences* (Smelser and Baltes 2004)).

## Session 5: levels, lifecourse, and pathways of embodiment leading to health inequities

This session would emphasize the historically contingent processes generating population health inequities, by considering levels, lifecourse, and pathways of embodiment, in historical context (see Table 14.3). A useful example could be that of changing trends in the magnitude of health inequities in smoking-related diseases, taking into account exposures at the global, country-specific, local, community, and individual levels, and also whether exposure starts *in utero*, in childhood, or in adulthood (Graham 1996; Brandt 2007). Topics of discussion, to be considered in relation to both birth cohort and period effects, could include: global trade agreements regarding the production, sale, and consumption of cigarettes, government policies about cigarette taxes and where smoking is allowed, tobacco industry efforts to target socially vulnerable smokers and public health initiatives to counter these campaigns, and smokers' physiological addiction to, reliance on, and enjoyment of cigarettes for their social and psychoactive properties. Equally germane examples could include access to safe drinking-water (McMichael 2001; Whiteford and Whiteford 2005; United Nations Development Programme (UNDP) 2006) or exposure to lead (McMichael 2001; Markowitz and Rosner 2002; Richardson 2005).

## Session 6: health inequities and social class: pathways and measurement

The sixth session would focus on class inequities in health (see Table 14.3). Describing their magnitude and analyzing their causes presumes an understanding of what social class is and how it can be empirically measured, at different levels, across the lifecourse

(Krieger et al. 1993; Krieger et al. 1997; Wright 1997; Shaw et al. 2007). Strengths and limitations of individual-, household-, and area-based measures of socio-economic position (e.g., income, education, occupation, wealth, debt) should be discussed, including how their meaning may vary by age, gender, race/ethnicity, and a country's economic level and the relative size of its formal, informal, and illegal economy (Krieger et al. 1997; Shaw et al. 2007). Assigned reading should include: 1. review articles conceptualizing and measuring socio-economic position in epidemiologic research—and giving concrete examples of instruments employed—in relation to levels and lifecourse, including the different pathways by which class inequality can be embodied; and, 2. a selection of epidemiologic investigations, with at least some relevance to the country or region that is the focus of the class, and which do a good as well as poor job of analyzing class inequities in health. The classroom discussion can then critique the specific articles, as informed by the more conceptual review articles; the same approach can be used for Sessions 7 to 10. Discussion for Sessions 6 to 9 should likewise consider how the measures of social position employed (e.g., class, for Session 6) can be used to stratify or 'control' for confounding by these social variables in studies not directly focused on health inequities.

## Session 7: health inequities and racism: pathways and measurement

This session will introduce the myriad ways racial inequality can harm health and becomes embodied to create biological expressions of racism (see Table 14.3) (Krieger 1999). Relevant pathways include adverse exposure to: economic and social deprivation; toxic substances, pathogens, and hazardous conditions; social trauma; targeted marketing of harmful commodities; and inadequate and degrading medical care (Krieger 1999). The session should begin by considering definitions of racism and its historical emergence and manifestations, including in relation to health, and note distinctions between—and links connecting—racism and class relations and health inequities, at the local and global levels (Banton 1998; Harrison 1999). It should then review the complexities of measuring these exposures at global, societal, institutional, community, and individual levels, in context, including actual instruments, and relating these exposures to adverse health outcomes (Krieger et al. 1993; Krieger 1999; Williams et al. 2003; Blank et al. 2004; Paradies 2006; Mays et al. 2007). To make the discussion concrete, readings should also include empirical epidemiologic studies investigating links between racism and health.

## Session 8: health inequities and gender: pathways and measurement

Session 8 would then focus on links between gender inequality and health: for women and men, and for girls and boys. Thinking clearly about these connections requires distinguishing between socially constructed gender and sex-linked biology (see Table 14.3) (see also Doyal 1995; Fausto-Sterling 2000; Krieger 2003a; Payne 2006). It likewise calls for addressing, for any given health outcome, whether risk is

affected by gender inequality, sex-linked biology, both, or neither (Krieger 2003a), as well as whether these risks are modified by other forms of social inequality (e.g., class, racism) (see Krieger et al. 1993; Doyal 1995; Payne 2006). As with Sessions 6 and 7, readings should include both conceptual and methodological discussions, examples of instruments, and specific epidemiologic investigations concerned with gender health inequities.

## Session 9: health inequities and sexuality: pathways and measurement

The ninth session would in turn consider health inequities due to discrimination based on sexuality (see Table 14.3), most typically focused on persons engaged in consensual sex with same-sex sexual partners, and who may or may not identify as lesbian, gay, bisexual, transgender (LGBT) or other variants of sexual identity (see Parker and Gagnon 1995; Meyer and Northridge 2007). Readings should include health-related review articles on conceptualizing and measuring sexuality and sexuality-based discrimination—at different levels, across the lifecourse, and in relation to other forms of social inequality, as well as empirical studies analyzing sexuality-based health inequities. While some of the epidemiologic investigations might usefully focus on HIV/AIDS and other sexually transmitted infectious (STI) diseases, for students to grasp the full health impact of inequities involving sexuality, it is critical that studies also be included on anti-LGBT discrimination and other non-STI somatic and mental health outcomes (e.g., alcohol use, tobacco-related diseases, depression, violence) (Meyer and Northridge 2007; Huebner et al. 2004; Warner et al. 2004; Diaz et al. 2001; Krieger and Sidney 1997).

## Session 10: health inequities between countries and regions: pathways and measurement

Session 10 would present an overview of health inequities reflecting global politics, past and present, as manifested in geopolitical—i.e., country or regional—inequities in health. As with the prior sessions, readings should include epidemiological review articles on conceptualizing and measuring global health inequities. Classroom discussion should critically analyze epidemiologic investigations, examining how the political economy of relationships between countries and regions shapes global health inequities (see Evans et al. 2001; Navarro and Muntaner 2004; Kunitz 2006; Kawachi and Wamala 2007). To aid students in grasping the magnitude of these inequities, two useful resources are: 1. the 'Worldmapper' project, in which global maps scale the size of countries to the size of their health burden (Dorling et al. 2007); and 2. 'Gapminder World 2006" (Rosling 2007), which visually depicts country-level changes, from 1960 to 2004, for various health indicators, both overall and in relation to income per capita in international dollars. Other resources on global inequities in health include reports from the World Health Organization's (WHO) Commission on the Social Determinance of Health (2008) and additional data available from the WHO's website (World Health Organization 2008).

## Session 11: case example: epidemiologic analyses of health inequities for a particular population

The next session would ask students to integrate their understandings of social inequalities in health by considering the cumulative embodied impact of multiple forms of inequity on a particular population, as manifested in various health outcomes (Krieger et al. 1993; Krieger 2004). The observed co-morbidities may occur because either the pathogenic processes are linked (e.g., the postulated associations between metabolic syndrome and cardiovascular disease, cancer, and diabetes) or because the exposures are similarly socially patterned even if the specific etiologies are distinct (e.g., lead poisoning and cervical cancer). This could most easily be accomplished by having students critically analyze a theme issue of a journal focused on health inequities experienced by a particular population group, e.g. the 2003 issue of the *American Journal of Public Health* on racism and health among US populations of color (Krieger 2003b) or, if available, a theme issue or series of articles focused on one of the populations experiencing health inequities in the country of focus for the class.

## Session 12: case example: epidemiologic analyses of health inequities for a particular outcome

In Session 12, the perspective would be reversed, and students would be asked to consider the different types of inequities that contribute to shaping the population distribution of one selected health outcome. Assigned readings and classroom discussion could centre on a special issue devoted to health inequities involving one particular health outcome, e.g. the 2005 special issue of *Cancer Causes and Control* devoted to US cancer disparities (Krieger 2005b), or analogous readings for an outcome of concern in the country where the class is being taught.

## Session 13: 'Politically correct' or correct science? The case of racism vs 'race' and health inequities

Session 13 would then introduce students to current debates focused on links between social inequalities and health. One such debate is whether it is a matter of *correct* science (Krieger 2005c; Krieger 2007a)—versus 'politically correct' science, as some influential conservative writers have charged (Satel 2000)—to conduct research on this topic. A contemporary example concerns longstanding debates over the causes of US racial/ethnic disparities in health status (Krieger et al. 1993; Krieger 1999; Williams et al. 2003). Readings should include review articles focused on the overall debate (see, for example, Krieger 2003c; Williams and Jackson 2005; Risch 2006) and also specific case studies, to work through the in-depth meanings of this debate for epidemiologic research. Useful examples might include either: 1. cardiovascular disease, contrasting etiologic research that defines the causal 'exposure' as racism (Krieger and Sidney 1996; Wyatt et al. 2003; Lewis et al. 2006) versus 'race' (Tang et al. 2006; Reiner et al. 2007); or, 2. low birthweight and preterm delivery, again comparing studies investigating racism (Stancil et al. 2000; Mustillo et al. 2004; Giscombe and Lobel 2005) versus 'race' (Menon et al. 2006; DeFranco et al. 2007) as causing the observed disparities.

## Session 14: 'Politically correct' or correct science? Confounding and the case of hormone therapy, cardiovascular disease, and breast cancer

The example for Session 14 should underscore why a concern about health inequities matters for the rigour of research not ostensibly concerned with this topic. One topical example concerns hormone therapy (HT), cardiovascular disease, breast cancer, gender, and social class (Krieger et al. 2005a). At issue is how uncritical reliance on a biomedical framework led to the discounting of epidemiologic evidence—dating back to the 1980s, and recently re-confirmed—that the supposed protective effect of long-term use of HT on risk of cardiovascular disease was due to confounding by social class, reflecting how wealthier women, with better health, were the most likely to be prescribed (and could afford) HT (Petitti 2004; Lawlor et al. 2004; Krieger et al. 2005a; Rossouw 2006). This alternative hypothesis received serious attention only after the Women's Health Initiative (WHI)—the first major clinical trial to focus on HT and risk of cardiovascular disease—unexpectedly reported in 2002 that HT did not decrease, and in fact may have increased, risk of cardiovascular disease; it also confirmed prior—albeit less well-publicized—concerns about increased risk of breast cancer (Writing Group for the Women's Health Initiative Investigators 2002). The serious potential burden of iatrogenic disease caused by HT use is shown by research indicating that the population attributable risk of breast cancer due to HT likely ranges between 10 to at least 20 per cent, which translates to an excess burden of breast cancer cases in the past decade numbering in the hundreds of thousands in the US alone (Ravdin et al. 2007; Clarke and Glaser 2007). Classroom discussion should focus on: 1. the importance of addressing confounding due to the social patterning of most exposures (Davey Smith 2003; Krieger 2004); and, 2. how ignoring health inequities can lead to invalid epidemiologic findings and harm the public's health (Krieger 2007a).

## Session 15: implications of epidemiologic research on health inequities for the public's health

Session 15 should provide examples of how epidemiologic research on health inequities can aid efforts to address these problems, from generating the evidence base to informing policy. Among possible topics of discussion, one would be current efforts to monitor the magnitude of health inequities, so that the size of the problem—and whether it is increasing or decreasing—is public knowledge; examples include the US *Public Health Disparities Geocoding Project* (Krieger et al. 2005b; Krieger et al. 2007) and the work of Global Equity Gauge Alliance (GEGA) (2007), which is active in Latin America (Chile and Ecuador), Africa (Burkina Faso, Kenya, South Africa, Zambia, and Zimbabwe), and Asia (Bangladesh, China, and Thailand). A second example could focus on the new and rapidly growing field of health impact assessment (HIA), which seeks to estimate the impact of public policies and the private sector on population health and health inequities (Krieger et al. 2003; Kemm et al. 2004; Scott-Samuel and O'Keefe 2007). A third could highlight how epidemiologic research on health inequities can help transform societies' approaches to public health; a likely example would be Sweden's new and innovative national population health policy, which is fostering cross-governmental and multilevel initiative to address the broader societal

determinants of health while also enhancing specific public health programmes (Swedish National Institute of Public Health 2003). Examples of analogous epidemiologic contributions from the country on which the course is focused should likewise be included.

### Session 16: who and what is accountable for social inequalities in health: summation, student projects, and course wrap-up

The final session should be used to sum up key lessons from the course; no new readings should be assigned. To ground the discussion, it would be useful to start by revisiting the initial questions posed by the course at the outset: What are social inequalities in health? And why do they matter? Students should discuss—and debate—these questions in relation to the theoretical, methodological, and empirical issues addressed in Sessions 2 to 15. Time should also be allotted for students to discuss key points learned from doing the final assignment, and to complete a course evaluation form.

## Teaching methods and format

Ideally, the course would be structured as a three-hour seminar, limited to 25 to 30 participants, that meets once a week for sixteen weeks. It could also be scaled down to a two-hour seminar that meets twice a week for eight weeks. If it were to be taught as a larger lecture-format course, it would need to include 'lab' sessions that give students time to discuss and debate the ideas they are learning.

The class should provide students with three opportunities to express their ideas and questions:

1. in a brief reflection-paper on each session's readings, handed in at the beginning of class (see section on 'Assessing students' achievements', below);
2. in a 20- to 30-minute small-group meeting with other students about the readings (with each group made up of six students, selected to span a range of expertise and experience), during which time the teacher would read through the reflection pieces to assess students' comprehension of the topic;
3. in a structured all-class discussion of the session's topic, led by the teacher.

To ensure a productive use of classroom time, the teacher should prepare, for each class, an outline of key topics to be addressed, and the amount of time allocated for discussion on each topic. The format for each class would be: 1. a brief opening by the teacher in order to orient students to the session's topic; 2. small-group discussion; and 3. full class-discussion, with time left at the end for the teacher to synthesize key points raised during the class and in the readings. Time also should be provided, midway through the course, to discuss questions the students may have about the final assignment.

## Assessing students' achievements

Table 14.5 describes the course's three types of assignments, intended to aid and evaluate students' achievements in fulfilling the learning objectives. The first would be

**Table 14.5** Course format and assignments for proposed introductory class on social inequalities in health

**Course format:** The course is structured as a seminar and students are responsible for participating in class discussion each session, based on the assigned readings.

**Course assignments:** Students will prepare for each class a short 1-page reflection piece and will write a short (up to 10 pages) final paper, due at the final meeting of the class.

- **The reflection piece** is intended to help organize the students' thoughts and questions before each class. It should summarize what struck the students most about the readings, what surprised them, what they learned, and what they agreed or disagreed with and why; it should **not** simply summarize what was said in the readings.
- **The final paper** will critique a current epidemiologic review article on the epidemiology and etiology of a particular health outcome and which was published within the past ten years in a leading epidemiologic or public health journal (e.g., *Epidemiologic Reviews*, *Annual Review of Public Health*, *American Journal of Epidemiology*, *International Journal of Epidemiology*, etc.). The paper should:
  1. start with a short introduction that explains the focus and purpose of the paper (up to 1 page);
  2. briefly describe what the article states are the key features of the population distribution of the disease and its major determinants (2–3 pages);
  3. critique the strengths and limitations of the article for the extent to which—and how—it discusses health inequities in relation to the outcome under consideration (4–5 pages);
  4. based on the materials covered in the class, offer suggestions for possible new avenues of research to identify the magnitude and causes of health inequities exhibited by the chosen outcome (1–2 pages); and
  5. provide a brief conclusion on whether it matters to give explicit attention to health inequities in an epidemiologic review article (up to 1 page).

the short one-page reflection papers that the students hand in at the beginning of each class (suggested as counting towards 25 per cent of the final grade), the second would be their participation in classroom discussion (35 per cent of the grade), and the third would be their final paper (40 per cent of the grade). At the final session, students should complete the course evaluation form, which would be given to the teacher only after she or he has submitted the students' grades.

## Concluding remarks

Teaching about social inequalities in health is vital for epidemiology. It matters substantively and methodologically. Training students new to epidemiology in the importance of thinking rigorously about health inequities, their determinants, and their implications for epidemiologic evidence and the public's health will enhance and invigorate our field. Equipped with such knowledge, we are better positioned—in the words of Edgar Sydenstricker (1881–1935), one of the great twentieth-century social

epidemiologists—to 'give glimpses of what the sanitarian has long wanted to see—a picture of the public-health situation as a whole, drawn in proper perspective and painted in true colors' (Sydenstricker 1925: 280). With this clearer vision, we stand a better chance of producing knowledge that can make a difference in improving population health and promoting health equity.

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