

Human Nomenclature: From Race to Racism

Carlos Zubarán, School of Medicine, University of Western Sydney and Sydney West Area Health Service, Australia

Carlos Zubarán, MD, PhD, Department of Psychiatry, Blacktown Hospital, PO Box 6010, NSW 2148, Tel. +61 02 98818000, Email. zubarán_jr@yahoo.com, Fax. +61 02 9881 8624

Abstract

Throughout time, evolutionary biologists have attempted to classify human beings according to a nomenclature based on supposed patterns of biological differences that have been used to suggest hierarchical categories. Recent genetic evidence disproves the assumption that races are genetically distinct human populations. Several studies refute human categorization as a severely flawed yardstick. For many, *race* is a construct that must be overcome in order to eradicate racism. Personal experiences of racism, harassment and discrimination are associated with multiple indicators of poorer physical and mental health status. Additionally, socio-economic differentials are likely to be a fundamental explanation for the observed inequalities in health status among minority groups. This commentary examines the discrepancies that race, ethnicity and similar human nomenclatures present. Furthermore, the potentially harmful consequences of the “scientific” use of race, in the form of stereotyping and racism, are discussed.

Introduction

A widely noticed op-ed in a recent edition of *The New York Times* declared that “the recognition that [human] races are real should have several benefits” (Leroi 2005: A23). In a subsequent article, an emeritus professor at Harvard University criticized what he considered a rebirth of an old and fallacious claim that maintains the extant confusion about racial categories and recent flawed conclusions about the relevance of race for medical practice (Lewontin 2005). In his article, the latter author reiterates that the largest amount of human variation, about 85%, occurs among individuals encompassed within geographical or linguistic boundaries and that a small number of still unidentified genetic traits that determine appearance characteristics, such as skin colour, hair form and nose shape, vary together (co-variation).

Despite the political pressure and the coincidence of cultural and societal stratification to reify and maintain race as a human classification, the classical definition of race is considered a prejudiced description of human variation. The maintenance of race categories as a valid classification expedient for humans minimizes the essential significance of socio-economic, cultural and psychological explanations for different health standards observed across distinct population groups. The insidious popularity of ethnicity as a new categorical scheme comes into view not as a satisfactory alternative but as the making of another distorted surrogate doomed to perpetuate a similar stereotypical divide, which ultimately facilitates discrimination and stigma.

This commentary examines the discrepancies that race, ethnicity and related terms convey. A series of considerations on the use and effects of conventional classifications of race and ethnicity is presented. Furthermore, the potentially harmful consequences of the use of the term *race*, in the form of stereotyping and racism, are discussed. It is expected that this initial foray might help to define researchable problems and foster debate to promote essential advancement in this arena.

Human Categorization: The Path to Ethnicity

Historically, the fountainhead of human classification does not originate from scientific sources. During the apogee of the ancient world empires – Egyptian, Greek and Roman – people with different language, cultural characteristics and traits were encompassed within a political structure, regardless of their physical variation, and no significant social meanings were attached to their physical differences (Blakely 1993; Fryer 1984). Religion and language were the most important criteria of identity during the Middle Ages and until the seventeenth century (Hannaford 1996).

During the exploratory circumnavigations in pre-Darwinian times, the observed human differences were credited to divine creation (American Anthropological Association [AAA] 2003). The clash between European colonists and captive Africans and American natives in the New World facilitated a divide along appearance and racial distinction. The term *race* possibly originates from the ancient French word *rasse* and the Italian word *razza*, and when it started being used for differentiating human populations according to appearance has not been determined (Sarich and Miele 2004).

In 1735, Carolus Linnaeus published the *Systema Naturae*, in which he classified the human species into four groups based in physical features and geographic ancestry: Homo European, Homo African, Homo Asiatic and Homo American (Linnaeus 1758). Human taxonomy was later expanded by Blumenbach to five different groups: Caucasian, Mongolian, Ethiopian, American and Malay (Blumenbach 1775). During the eighteenth and nineteenth centuries, academics endeavoured to quantify the differences among races by measuring heads and other parts of the human body (Haller 1971; Smedley 1999b). By the end of nineteenth and the early twentieth centuries, developing tests to measure brain function and intelligence became the dominant interest of scientists who were looking for ways of documenting racial differences, mainly between “Blacks” and “Whites” (Smedley and Smedley 2005). The legacy of these theories is still perceived as highly consequential (Bhopal 2002a).

Yet an alternative scientific discourse started to take form when Darwin proposed an evolutionary framework to explain human variation in *On the Origin of Species* (Darwin 1859). Anthropologists, led by Franz Boas, began to challenge the view of race by 1890 by proposing typologies based on language and culture as well (Shields et al. 2004). By 1900, there was no consensus on the definition of race, since before Mendel’s theory, race and additional group differences were conceived as heritable and accumulated cultural differences carried in the blood (Stocking 1994). In the late 1930s, Ashley Montagu claimed that race was a biological myth (Ashley Montagu 1942). During the post–World War II period, biologists moved from concepts of “race as a type” (a static entity) to “race as a population,” which is tantamount to groups continually changing genetic composition as result of evolutionary forces of drift, migration and selection (Stepan 1982).

The concept of race was initially applied in the eighteenth century as an arbitrary classification and extended to humans a taxonomic classification (Senior and Bhopal 1994). The biological concept of race was dominant until its decline with the collapse of Nazi racism (Bhopal and Donaldson 1998). Lately, a paradigm shift has started to take place, after genetic studies demonstrated that

individuals from the same racial group are about as different from each other as individuals from any two distinct racial groups (AAA 2003).

The concept of ethnicity is gradually supplanting the concept of race (Senior and Bhopal 1994). Yet these are dissimilar concepts in that race is customarily recognized by physical manifestations and has no intrinsic association with cultural patterns, whereas ethnicity refers to unconstrained association with a particular group of people and internalized values that may influence behaviour and social expression (Helms 1996). The word *ethnic* is derived from the Greek *ethnikos*, meaning race or nation, and it was originally used to refer to nations not converted to Christianity (Yankauer 1987). Ethnicity tends to designate a group of people with common cultural traits, including language, geographic identifiers, religious and historic characteristics, tradition, values, beliefs and food habits that distinguish them from others (Jones 1997; Parrilo 1997; Smedley 1999b).

Biology and Genes

Scientific advancement in human biology and genetics, as well as in the social sciences, has spurred a consequential and progressive change of the human classification system. Several studies have refuted human classifications as severely flawed (Gould 1981). Differences in skin colour are fallacious indicators of biological differences among populations (Parra et al. 2004) and race, whether imposed or self-identified, is a weak surrogate for genetic and non-genetic factors associated with health status (Royal and Dunston 2004).

Current genetic data reject the notion that purportedly different races genetically constitute distinct human populations. Studies developed during the last decade provide evidence that there is no connection between self-identified race or ethnicity and frequency of particular genetic variants (Angier 2000; Marshall 1998). The low level of genetic variability and structuring of the human species is incompatible with the existence of race as a biological entity (Pena 2005).

Modern *Homo sapiens* developed in Africa about 200,000 years ago, and spread around the world and diversified approximately 50,000 to 100,000 years ago. Human migrations generated an accumulation of random genetic drift at polymorphic sites in the genome, the reason why allele frequencies usually show gradual modifications throughout different global regions (Bonham et al. 2005). These diverse allele frequencies do not denote that different races exist, but only “that different parts of a continuum have been sampled” (Sternberg et al. 2005: 55). Several authors advocate that the collection of individuals according to continent of origin based on patterns of allelic frequency does not validate the claim of genetically defined races (Haga and Venter 2003).

As we approach the conclusion of the Human Genome Project, the scientific evidence indicates that any two human individuals are about 99.9% the same, genetically. The remaining 0.1% represents approximately three million differences between individuals’ DNA, and only a small fraction of these differences are responsible for variations in health, behaviour and other human characteristics (Cargill et al. 1999; Halushka et al. 1999). Furthermore, the greater part of phenotypic traits (including pharmacogenetic variability and non-genetic factors) results from a complex interaction between genetic and non-genetic factors (Goldstein et al. 2003; King et al. 1992).

A recent issue of *Nature Genetics* specifically focused on human genome variation and race. An initial caveat alerts the reader that, in spite of the attempts of the US Census Bureau to expand the definitions of race, humans are much more than a plain sum of genes and that simplistic concepts of “race” are “bad medicine” and “bad science” (Patrinos 2004: S2). As a result of the ample human migratory movements, a significant genetic flow has occurred, precluding the notion of genetic “purity” and definite boundaries between individuals or populations (“races”) (Jorde and Wooding 2004). In addition, genetic variations tend to be shared among populations (Jorde and Wooding 2004) and innumerable individuals have ancestors from multiple regions of the world (Collins 2004). Thus, racial classifications do not adequately describe the distribution of genetic variation in humans (Tishkoff and Kidd 2004).

Altogether, there is an excessive emphasis on genetics as a foremost explanatory element for health disparities, as these discrepancies derive primarily from differences in a myriad of factors, including

culture, diet, socio-economic status, education and additional social determinants (Collins 2004; Sankar et al. 2004).

Social Construct

A residual claim used to justify the use of racial categories rests on its salience as a social construct (Krieger 2003). However, the interpretation of this role is not univocal, and there are alternative functions that do not necessarily involve categorical purposes. Race has been considered a construct that must be overcome in order to eradicate racism (Guimarães 2002). Its only possible reference would be as an emic construct, but not as a categorical entity. The terms *emic* and *etic* derive from linguistic analysis and have been used by extension to examine colour–race questions (Byrne et al. 1995). Emic constructs are accounts, descriptions and conceptual schemes consonant with the perceptions and understandings deemed appropriate by the insider's culture. On the other hand, etic constructs are descriptions and analyses structured as conceptual schemes and categories of the scientific community. Etic constructs must be precise, comprehensive, replicable and observer independent, but devoid of any priority over competing emic claims (Lett 1996).

Researchers can follow an etic or an emic strategy for racial census purposes (Harris 1990). Failure to distinguish between these two types of data is one of the most prevalent sources of confusion in the social sciences and is implicated in the unreliability of racial censuses (Harris et al. 1993). In an emic approach, racial identity is defined by using the terms that respondents regard as appropriate to categorize themselves or others, irrespective of the observer's preferences. The imposition of emically invalid categorization and inappropriate labels may generate distorted information (Byrne et al. 1995).

Governmental agencies tend to justify their proposed human categories as representing a social–political construct designed for collecting data. Yet the definition of population and race can be socially and biologically incongruent, and evidence suggests that geneticists, social scientists and clinicians allow for external validity issues when operationalizing population and racial categories in research designs, data analyses and clinical practice (Wang and Sue 2005). The American Medical Association (AMA) admits that the recognition of race and ethnicity as socially defined entities presents significant challenges to public health surveillance and medicine and that the current classification systems have limited usefulness in public health or medicine (AMA 2003).

Therefore, the claim that racial/ethnic categories are social constructs does not necessarily bear legitimization for the sake of human categorization. The proposed relevance of race as a social construct is insufficient to justify its perpetuation as a categorical and differential entity for humans.

Public Health, Labels and Stigma

Another claim for the maintenance of race as a human category is based on its purported relevance for public health and policy initiatives. This contention advocates its usefulness for reducing preventable health problems and rectifying inequalities in health status among specific population subgroups. Nevertheless, there are challenging, if not insurmountable, barriers for the use of taxons in public health surveillance as well (Ellison et al. 1997; Hahn and Stroup 1994). The intrinsic methodological problems for this proposition are likely to increase when the taxonomy is applied across countries (Travassos and David 2004).

The fundamental difficulties for using race and ethnicity as variables in public health surveillance include differences in terminology, data collection procedures, perceptions of group identity and changing demographics of population subgroups (Aspinall 1997; Hahn and Stroup 1994; Terris 1973; Williams 1996). Some authors allude to significant inconsistencies and systematic biases (Bennett 1997), and “statistical ghettos” (Terris 1973), in major sources of racial and ethnic analysis.

The concepts of race and ethnicity are weakly defined, and the way by which ethnicity or race is incorporated into studies, or measured among Federal agencies, is inconsistent (Sheldon and Parker 1992; Warren et al. 1994). There is a lack of scientific consensus on the nature of race and ethnicity. The World Health Organization does not record race or ethnicity in its international health statistics (Hahn and Stroup 1994). Moreover, umbrella terms such as Hispanic or Latino may cause a “minoriti-

zation” of foreigners by creating an artificial ethnicity (Gimenez 1989). Several authors have criticized the use of reductionist labels as a misleading, stereotypical and racist scheme that exerts ideological and political functions (Caldwell and Popenoe 1995; Hayes-Bautista 1980; Yankauer 1987).

The insuperable limitations of human categorization have already gained the status of truism in the official discourse. The US Office of Management and Budget (OMB), by way of its Directive 15, acknowledges that its categories are devoid of “scientific and anthropological” foundations (AAA 2003). The AMA encourages researchers to acknowledge the limitations of all current methods to categorize race and ethnicity, and the American Anthropological Association is expecting the elimination of the term *race* from the 2010 Census.

As a consequence, the National Institutes of Health were advised to rethink their use of *race* in population research. Such a recommendation is ultimately directed at the OMB, which, since October 1997, recognizes two categories of ethnicity and five categories of race (Oppenheimer 2001). In spite of these modifications, the above-mentioned OMB directive is still under criticism. Specifically, the ethnic category Hispanic has been criticized for including under the same descriptor people with essential differences in many critical respects (Willis 2001).

In American censuses, state officials have changed categories and their definitions several times since the first census in 1790, and the use of race, ethnicity, colour or some combination of these depended mostly on historical circumstance (Nobles 2000). Both in the United States and in Latin America, Hispanics/Latinos prefer to identify themselves by their nationalities before making any other identification as to race, language, culture or ancestry (Gonzalez 1992). In fact, 40% of those classified as Hispanics, using secondary identifiers in the 1980 census, gave a negative response to the Spanish/Hispanic origin question and instead wrote their nationalities (Tienda and Ortiz 1986). Brazilians are an example of a nationality wrongfully encompassed under the broad and imprecise conceptual boundaries of the term *Hispanic* (Taracena 2002).

Studies that examined reliability in the classification of race and ethnicity in the census found that from one year to the next, more than a third of individuals interviewed reported having different ethnic identities (United States Bureau of the Census 1974). Indeed, the AMA admits that these categories are used routinely by health researchers in an uncritical manner and with inattention to fundamental problems of measurements (AMA 2003). As a consequence, some fear that comparative analysis of longitudinal data using race/ethnicity might turn out to be difficult if not impossible (Willis 2001).

Race and Racism

Significant evidence supports the proposition that socio-economic differentials are likely to be a fundamental explanation for the observed inequalities in health status among minority groups (Nazroo 2003). The association between socio-economic status (SES) and health conditions was observed long ago in the work of Friedrich Engels in the nineteenth century. Still, there is a scarcity of reliable data on socio-economic position in health studies of various minority groups. Unlike most industrialized nations, and partly because of limited data on socio-economic position in conventional health statistics, the US concentrates on health differences according to race, instead of reporting health on the basis of socio-economic differentials in health or social class (Navarro 1990; Nazroo 2003). Race has been more salient in the US, whereas studies of health disparities in European countries have attributed much more prominence to social class (Travassos and David 2004). Some claim that the intent to analyze ethnic or racial inequalities in health status without material groundwork on socio-economic factors is naïve (Bhopal 2002b) and that the focus should be directed to all socio-economically disadvantaged individuals (Ellison et al. 1997).

The current classification systems may reinforce stereotypes and condone inequalities that obscure factual causal relationships (AMA 2003). Some authors caution that the continued use of imposed categories enforces disadvantages and perpetuates inequality (Ellison et al. 1997). In the US, ethnicity has been used as a measure of socio-economic status (Chaturvedi 2001) and race as a surrogate for poverty in many analyses (Nazroo 2003). In relation to specific umbrella terms, many authors advocate that nomenclatures such as “black,” or “ethnic” labels such as Latino and Asian,

have also been used as proxy or “shorthand” hypernyms for poverty and minority status (Bhopal 2002a; Bhopal and Rankin 1999; Pfeffer 1998). In the epidemiological community, there is an impression that these populational generalizations may be part of a covert racist agenda. Some also challenge the idea of ethnic group as a neutral terminology, without negative denotations, since traits such as “degree of swarthinness, hair texture, facial features, and perceived intelligence” continue to be associated with certain ethnic groups (Oppenheimer 2001: 1052). In fact, there is trend in the scientific literature to emphasize racism and prejudice instead of the still more cited terms race and ethnicity (Afshari and Bhopal 2002).

Personal experiences of racism, harassment and discrimination are associated with multiple indicators of poorer physical and mental health status (Nazroo 2003). Socially inflicted trauma and internalized oppression are considered among the leading pathways through which racism can harm health (Krieger 2003; Nazroo 2003). Discrimination is multidimensional and produces negative emotional states such as anxiety and depression, which in turn alter biological processes or patterns of behaviour (James 2003). Racism and discrimination also refer to differential treatment of group members by both individuals and societal institutions. Institutional racism also has pervasive effects on education, employment and socio-economic mobility (Williams 1996).

Racism and discrimination negatively affect the health of individuals and entire populations and are considered a fundamental cause of the enduring racial/ethnic disparities in health. Yet research on racism as a harmful determinant of population health is still in its initial stages, and only a limited number of studies have investigated how prejudice and discrimination affect racial/ethnic minority groups, including Latinos (Cain and Kington 2003). Therefore, there is an urgent need to focus beyond the interpersonal conflicts to systematically investigate how prejudice operates within society and to what extent institutional discrimination affects the health status of various groups (Williams et al. 2003).

Conclusions and Future Directions

Health services research has exhaustively documented racial and ethnic disparities in quality of care and health outcomes (Pena 2005; Shields et al. 2005). Further research should be conducted to identify the directions to reduce the disparity gaps (Bach et al. 2004). Much of the difficulty in clarifying these inequalities is due to the vague and conflated nature of the race constructs commonly used in biomedical research, which convey primarily social and political meanings (Shields et al. 2005).

The sense of identity is experienced as a fluid and contextual idea, and respondents tend to express their identities through the use of many different terms. Immigrants become labelled as an ethnic group as their length of local residence grows, but identity is manufactured domestically rather being imported from abroad (Hirschman 1982). Societal preferences should be respected by democratic states and by official census institutions, which should consider self-report as a preferable way for assessing people’s identities (Kaplan and Bennett 2003). The collection of populational data based on self-reports is endorsed by the United Nations and is currently international practice (Telles and Lim 1998).

Constant vigilance is needed in order to guarantee that public health initiatives do not surpass a fair and prudent frontier of individual liberties and that public health professionals consider the moral fundamentals of their work. The work of public health professionals may be infringing on individual liberties in ethically questionable forms, particularly if social harm results from the imposition and perpetuation of social stereotypes (Kass 2001). In fact, sense of identity is considered a matter of civil rights. Some authors understand that the limitation of choices for pre-defined terms is a violation of this right, which might marginalize those respondents who do not belong to a recognized ethnic group (Aspinall 1997; Harris 1990).

This scenario warrants a proposition for an ethic framework in public health in which the ethics implications of interventions, policies, programs and research initiatives are scrutinized (Kass 2001). Public health dilemmas should be resolved via a human rights analysis, wherein a rightful and fair approach based on international human rights law should guarantee governmental responsibility

and accountability (Gruskin 2002). Although legal restrictions for the use of race in medical research are “more limited than might be expected,” the use of race as a variable in human biomedical and genetic research may pose legal issues as well (Lillquist and Sullivan 2006: 540). It is judicious and sensible to defend a lawful and prompt response if racism or any other sort of discriminatory act or scheme is institutionally perpetrated to any harmful extent against minority groups or individuals.

Detailed descriptions of study populations and their specific characteristics should be presented (Keita et al. 2004), and respondents should be given the right to self-report and to avoid restrictive criteria. Surveillance systems must adapt to demographic circumstances by regularly evaluating the way specific population segments conceptualize and characterize themselves (Hahn and Stroup 1994). In addition, a critical and judicious set of criteria should guide publishing policies in terms of population description and report (Obialo 1996).

New disciplines and methodologies to investigate social networks, migration and geographically concentrated poverty are needed to settle new benchmarks to develop populational inquiry (Fullilove 1998). An advanced and structured research agenda to investigate experiences of racism and discrimination as well as their impact on mental and physical health should be promoted. There is a need for more anthropological, sociological and psychological research on cultural factors that forge the internalized concepts of identity (Collins 2004). Training programs based on a new theoretical paradigm should be developed for students and investigators alike.

The abandonment of racially or ethnically oriented research is still a feat to be attained. We have now reached a momentous and timely opportunity to confront, and eventually dismantle, the moral economy that sustains racial/ethnic disparities (James 2003). The arguments based on the social construct of human nomenclature and a surveillance requirement of population classification represent a last-ditch stand to retain the racial separatism that has been considered so pervasive in the American psyche (Terris 1973). As recommended by a prominent American thinker, public opinion as well as the scientific community should “take seriously the ideals of justice and freedom that come easily to the lips but are harder to defend and advance” (Chomsky 2003: 10).

Acknowledgements

This work was supported by grant #200498/00-2 from the Brazilian national Research Council (CNPq). Dr. Katia Foresti contributed significantly in several sections of this manuscript. Professor Elizabeth Rata offered valuable review comments. In developing these ideas, I also benefited greatly from exchanges with colleagues in the Department of Psychiatry at Columbia University and in the Department of Psychiatry at Northland Health District Health Board, New Zealand.

References

- Afshari, R. and R.S. Bhopal. 2002. “Changing Pattern of Use of ‘Ethnicity’ and ‘Race’ in Scientific Literature.” *International Journal of Epidemiology* 31(5): 1074.
- American Anthropological Association. 2003. “American Anthropological Association Response to OMB Directive 15: Race and Ethnic Standards for Federal Statistics and Administrative Reporting.” Retrieved October 27, 2004. < <http://www.aaanet.org/gvt/ombdraft.htm> >.
- American Medical Association. 2003. “American Medical Association Report 5 of the Council on Scientific Affairs (I-00): Classification of Data on Race and Ethnicity.” Retrieved October 27, 2004. <<http://www.ama-assn.org/ama/no-index/about-ama/13581.shtml> >.
- Angier, N. 2000, August 22. “Do Races Differ? Not Really, Genes Show.” *The New York Times*, p. F1.
- Ashley Montagu, M.F. 1942. *Man’s Most Dangerous Myth: The Fallacy of Race*. New York: Columbia University Press
- Aspinall, P.J. 1997. “The Conceptual Basis of Ethnic Group Terminology and Classifications.” *Social Science & Medicine* 45(5): 689–98.
- Bach, P.B., H.H. Pham, D. Schrag, R.C. Tate and J.L. Hargraves. 2004. “Primary Care Physicians Who Treat Blacks and Whites.” *New England Journal of Medicine* 351(6): 575–84.
- Bennett, T. 1997. “‘Racial’ And Ethnic Classification: Two Steps Forward and One Step Back?” *Public Health Reports* 112(6): 477–40.

- Bhopal, R. 2002a. "Heterogeneity among Indians, Pakistanis, and Bangladeshis Is Key to Racial Inequities." *British Medical Journal* 325(7369): 903.
- Bhopal, R. 2002b. "Revisiting Race/Ethnicity as a Variable in Health Research." *American Journal of Public Health* 92(2): 156–7.
- Bhopal, R. and L. Donaldson. 1998. "White, European, Western, Caucasian, or What? Inappropriate Labeling in Research on Race, Ethnicity, and Health." *American Journal of Public Health* 88(9): 1303–7.
- Bhopal, R. and J. Rankin. 1999. "Concepts and Terminology in Ethnicity, Race and Health: Be Aware of the Ongoing Debate." *British Journal of Dentistry* 186(10): 483–4.
- Blakely, A. 1993. *Blacks in the Dutch World*. Bloomington: Indiana University Press.
- Blumenbach, J. 1775. *De Generis Humani Varietate Nativa [on the Natural Varieties of Mankind]*. Gottigaen, GE: A. Vandenhoek.
- Bonham, V.L., E. Warshauer–Baker and F.S. Collins. 2005. "Race and Ethnicity in the Genome Era: The Complexity of the Constructs." *The American Psychologist* 60(1): 9–15.
- Byrne, B., M. Harris, J.G. Consorte and J. Lang. 1995. "What's in a Name? The Consequences of Violating Brazilian Emic Color–Race Categories in Estimates of Social Well–Being." *Journal of Anthropological Research* 51: 389–397.
- Cain, V.S. and R.S. Kington. 2003. "Investigating the Role of Racial/Ethnic Bias in Health Outcomes." *American Journal of Public Health* 93(2): 191–2.
- Caldwell, S.H. and R. Popenoe. 1995. "Perceptions and Misperceptions of Skin Color." *Annals of Internal Medicine* 122(8): 614–7.
- Cargill, M., D. Altshuler, J. Ireland, P. Sklar, K. Ardlie, N. Patil et al. 1999. "Characterization of Single–Nucleotide Polymorphisms in Coding Regions of Human Genes." *Nature Genetics* 22(3): 231–8.
- Chaturvedi, N. 2001. "Ethnicity as an Epidemiological Determinant – Crudely Racist or Crucially Important?" *International Journal of Epidemiology* 30(5): 925–7.
- Chomsky, N. 2003. *Hegemony or Survival: America's Quest for Global Dominance (the American Empire Project)*. New York, NY: Metropolitan Books.
- Collins, F.S. 2004. "What We Do and Don't Know About 'Race', 'Ethnicity', Genetics and Health at the Dawn of the Genome Era." *Nature Genetics* 36(11 Suppl): S13–5.
- Darwin, C. 1859. *On the Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life*. London, UK: John Murray.
- Ellison, G.T., T. de Wet, C.B. IJsselmuiden and L.M. Richter. 1997. "Segregated Health Statistics Perpetuate Racial Stereotypes." *British Medical Journal* 314(7092): 1485.
- Fryer, P. 1984. *Staying Power: The History of Black People in Britain*. London, UK: Pluto Press.
- Fullilove, M.T. 1998. "Comment: Abandoning 'Race' As a Variable in Public Health Research – An Idea whose Time Has Come." *American Journal of Public Health* 88 (9): 1297–8.
- Gimenez, M.E. 1989. "'Latino/Hispanic' – Who Needs a Name? The Case against a Standardized Terminology." *International Journal of Health Services* 19(3): 557–71.
- Goldstein, D.B., S.K. Tate and S.M. Sisodiya. 2003. "Pharmacogenetics Goes Genomic." *Nature Reviews Genetics* 4(12): 937–47.
- Gonzalez, D. 1992, November 15. "What's the Problem With 'Hispanic'? Just Ask a 'Latino.'" *The New York Times*, p. 6.
- Gould, S. 1981. *The Mismeasure of Man*. New York, NY: Norton.
- Gruskin, S. 2002. "Ethics, Human Rights, and Public Health." *American Journal of Public Health* 92(5): 698–9.
- Guimarães, A.S.A. 2002. *Classes, Raças e Democracia*. São Paulo, SP: Editora 34.
- Haga, S.B. and J.C. Venter. 2003. "Genetics. FDA Races in Wrong Direction." *Science* 301(5632): 466.
- Hahn, R.A. and D.F. Stroup. 1994. "Race and Ethnicity in Public Health Surveillance: Criteria for the Scientific Use of Social Categories." *Public Health Reports* 109(1): 7–15.
- Haller Jr., J.S. 1971. *Outcasts from Evolution: Scientific Attitudes of Racial Inferiority, 1859–1900*. Urbana, IL: University of Illinois Press.
- Halushka, M.K., J.B. Fan, K. Bentley, L. Hsie, N. Shen, A. Weder et al. 1999. "Patterns of Single–Nucleotide Polymorphisms in Candidate Genes for Blood–Pressure Homeostasis." *Nature Genetics* 22(3): 239–47.
- Hannaford, I. 1996. *Race: The History of an Idea in the West*. Baltimore, MD: Johns Hopkins University Press and the Woodrow Wilson Center.

- Harris, M. 1990. "Emics and Etics Revisited." In T. Healand, K. Pike and M. Harris, eds., *Emics and Etics: The Insider/Outsider Debate* pp. 48-61. Newbury Park, CA: Sage Publications.
- Harris, M., J.G. Consorte, J. Lang and B. Byrne. 1993. "Who Are Whites?: Imposed Census Categories and the Racial Demography of Brazil." *Social Forces* 72(2): 451-62.
- Hayes-Bautista, D.E. 1980. "Identifying 'Hispanic' Populations: The Influence of Research Methodology upon Public Policy." *American Journal of Public Health* 70(4): 353-6.
- Helms, J.E. 1996. "Toward a Methodology for Measuring and Assessing Racial as Distinguished from Ethnic Identity." In G.I. Sadowsky and J.C. Impara, eds., *Multicultural Assessment in Counseling and Clinical Psychology* pp. 143-92. Lincoln, NE: Burrows Institute of Mental Measurements.
- Hirschman, C. 1982. "Immigrants and Minorities: Old Questions for New Directions in Research." *International Migration Review* 16(2): 474-90.
- James, S.A. 2003. "Confronting the Moral Economy of US Racial/Ethnic Health Disparities." *American Journal of Public Health* 93(2): 189.
- Jones, J.M. 1997. *Prejudice and Racism*. New York: McGraw-Hill.
- Jorde, L.B. and S.P. Wooding. 2004. "Genetic Variation, Classification and 'Race.'" *Nature Genetics* 36(11 Suppl): S28-33.
- Kaplan, J.B. and T. Bennett. 2003. "Use of Race and Ethnicity in Biomedical Publication." *Journal of the American Medical Association* 289 (20): 2709-16.
- Kass, N.E. 2001. "An Ethics Framework for Public Health." *American Journal of Public Health* 91(11): 1776-82.
- Keita, S.O., R.A. Kittles, C.D. Royal, G.E. Bonney, P. Furbert-Harris, G.M. Dunston and C.N. Rotimi. 2004. "Conceptualizing Human Variation." *Nature Genetics* 36(11 Suppl): S17-20.
- King, R., J. Rottera and A. Motulski. 1992. *The Genetic Basis of Common Diseases*. Oxford, UK: Oxford University Press.
- Krieger, N. 2003. "Does Racism Harm Health? Did Child Abuse Exist before 1962? On Explicit Questions, Critical Science, and Current Controversies: An Ecosocial Perspective." *American Journal of Public Health* 93(2): 194-9.
- Leroi, A.M. 2005, March 14. "A Family Tree in Every Gene." *The New York Times*, pA23.
- Lett, J. 1996. "Emic/Etic Distinctions." In D. Levinson, and Melvin, E., eds, *Encyclopedia of Cultural Anthropology* pp. 382-83. New York, NY: Henry Holt and Company.
- Lewontin, R.C. 2005. "The Fallacy of Racial Medicine: Confusions about Human Races." *Genewatch* 18(4): 5-7, 17.
- Lillquist, E. and C.A. Sullivan. 2006. "Legal Regulation of the Use of Race in Medical Research." *Journal of Law, Medicine & Ethics* 34: 535-51.
- Linnaeus, C. 1758. *Systemae Naturae [the System of Nature]*. Stockholm, Sweden: Laurentii Salvii, Holmiae.
- Marshall, E. 1998. "DNA Studies Challenge the Meaning of Race." *Science* 282(5389): 654-5.
- Navarro, V. 1990. "Race or Class Versus Race and Class: Mortality Differentials in the United States." *Lancet* 336(8725): 1238-40.
- Nazroo, J.Y. 2003. "The Structuring of Ethnic Inequalities in Health: Economic Position, Racial Discrimination, and Racism." *American Journal of Public Health* 93(2): 277-84.
- Nobles, M. 2000. "History Counts: A Comparative Analysis of Racial/Color Categorization in US and Brazilian Censuses." *American Journal of Public Health* 90(11): 1738-45.
- Obialo, I. 1996. "Guidelines Will Encourage the Thinking That Underpins Racism in Medicine." *British Medical Journal* 313(8054): 426.
- Oppenheimer, G.M. 2001. "Paradigm Lost: Race, Ethnicity, and the Search for a New Population Taxonomy." *American Journal of Public Health* 91(7): 1049-55.
- Parra, E.J., R.A. Kittles and M.D. Shriver. 2004. "Implications of Correlations between Skin Color and Genetic Ancestry for Biomedical Research." *Nature Genetics* 36(11 Suppl): S54-60.
- Parrilo, V.N. 1997. *Strangers to These Shores*. Boston: Allyn & Bacon.
- Patrinos, A. 2004. "'Race' and the Human Genome." *Nature Genetics* 36(11 Suppl): S1-2.
- Pena, S. 2005. "Reasons for Banishing the Concept of Race from Brazilian Medicine." *História, Ciência e Saúde - Manguinhos* 12(2): 321-346.

- Pfeffer, N. 1998. "Theories of Race, Ethnicity and Culture." *British Medical Journal* 317(7169): 1381–4.
- Royal, C.D. and G.M. Dunston. 2004. "Changing the Paradigm from 'Race' to Human Genome Variation." *Nature Genetics* 36(11 Suppl): S5–7.
- Sankar, P., M.K. Cho, C.M. Condit, L.M. Hunt, B. Koenig, P. Marshall et al. 2004. "Genetic Research and Health Disparities." *Journal of the American Medical Association* 291(24): 2985–9.
- Sarich, V. and F. Miele. 2004. *Race, the Reality of Human Differences*. Boulder, CO: Westview Press.
- Senior, P.A. and R. Bhopal. 1994. "Ethnicity as a Variable in Epidemiological Research." *British Medical Journal* 309(6950): 327–30.
- Sheldon, T.A. and H. Parker. 1992. "Race and Ethnicity in Health Research." *Journal of Public Health Medicine* 14(2): 104–10.
- Shields, A., C. Lerman and P. Sullivan. 2004. "Translating Emerging Research on the Genetics of Smoking into Clinical Practice: Ethical and Social Considerations." *Nicotine & Tobacco Research* 6(4): 675–88.
- Shields, A.E., M. Fortun, E.M. Hammonds, P.A. King, C. Lerman, R. Rapp and P.F. Sullivan. 2005. "The Use of Race Variables in Genetic Studies of Complex Traits and the Goal of Reducing Health Disparities: A Transdisciplinary Perspective." *The American Psychologist* 60(1): 77–103.
- Smedley, A. 1999b. *Race in North America: Origin and Evolution of a Worldview*. Boulder, CO: Westview Press.
- Smedley, A. and B.D. Smedley. 2005. "Race as Biology Is Fiction, Racism as a Social Problem Is Real: Anthropological and Historical Perspectives on the Social Construction of Race." *The American Psychologist* 60(1): 16–26.
- Stepan, N. 1982. *The Idea of Race in Science*. Hamden, CT: Archon Books
- Sternberg, R.J., E.L. Grigorenko and K.K. Kidd. 2005. "Intelligence, Race, and Genetics." *The American Psychologist* 60(1): 46–59.
- Stocking, G. 1994. "The Turn-of-the-Century Concept of Race." *Modernism/Modernity* 1(1): 4–16.
- Taracena, G.A.H. 2002. "What Is the Meaning of South Asian Ethnicity?" Retrieved May 20, 2002. <<http://bmj.bmjournals.com/cgi/eletters/324/7336/511#20433>>.
- Telles, E.E. and N. Lim. 1998. "Does It Matter Who Answers the Race Question? Racial Classification and Income Inequality in Brazil." *Demography* 35(4): 465–74.
- Terris, M. 1973. "Desegregating Health Statistics." *American Journal of Public Health* 63(6): 477–80.
- Tienda, M. and V. Ortiz. 1986. "Hispanicity" and the 1980 Census." *Social Science Quarterly* 67(1): 3–20.
- Tishkoff, S.A. and K.K. Kidd. 2004. "Implications of Biogeography of Human Populations for 'Race' and Medicine." *Nature Genetics* 36 (11 Suppl): S21–7.
- Travassos, C.W. and David R. 2004. "The Concept and Measurement of Race and Their Relationship to Public Health: A Review Focused on Brazil and the United States." *Cadernos de Saúde Pública*. 20(3): 660–78.
- United States Bureau of the Census. 1974. "Consistency of Reporting of Ethnic Origin in the Current Population Survey, Technical Paper No. 31." Department of Commerce.
- Wang, V.O. and S. Sue. 2005. "In the Eye of the Storm: Race and Genomics in Research and Practice." *The American Psychologist* 60(1):37–45.
- Warren, R.C., R.A. Hahn, L. Bristow and E.S. Yu. 1994. "The Use of Race and Ethnicity in Public Health Surveillance." *Public Health Reports* 109(1): 4–6.
- Williams, D.R. 1996. "Race/Ethnicity and Socioeconomic Status: Measurement and Methodological Issues." *International Journal of Health Services* 26(3): 483–505.
- Williams, D.R., H.W. Neighbors and J.S. Jackson. 2003. "Racial/Ethnic Discrimination and Health: Findings from Community Studies." *American Journal of Public Health* 93(2): 200–8.
- Willis, D.P. 2001. "Them and Us: The Politics of Population Taxonomy." *American Journal of Public Health* 91(7): 1048–9.
- Yankauer, A. 1987. "Hispanic/Latino – What's in a Name?" *American Journal of Public Health* 77(1): 15–7.