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Focus on Hamilton County Women and Children

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Lessons Learned About How to Improve the Use of Race as an Indicator in Health Status Studies

This issue of the Maternal and Child Health Report examines the use of race as a variable in health research. There has been much discussion in the medical literature about when, why and how race is used in studies as a variable. While race, as a concept, has a great deal of social significance, its importance as a biological phenomena is highly debatable. In addition, its use as a predictor of health outcomes is incomplete without consideration of what race means in the social context.

Race, as a variable, has been found to be a significant predictor of many, many health outcomes including: birth weight, infant mortality, adult heart disease...the list goes on and on. What exactly are these studies capturing when race is added in as a variable among others such as socioeconomic status, age, marital status, and education?

The belief that races are human populations which differ inherently from each other, biologically, is without scientific basis.¹ In fact, there is fewer genetic variation between races than within them. In other words, human cells under a microscope are non-distinguishable in terms of race. Knowing what race one belongs to tells us more about how our society defines "difference" than about our genetic makeup.

Also contrary to popular belief, science is not value-free. One way in which preconceived notions, cultural norms, and political agendas shape scientific research is by determining the projects that get funded and the questions that get asked². Past medical abuses in the name of scientific research (such as the Tuskegee Syphilis Experiment in which black men with syphilis were secretly denied medical treatment) have shown that researchers must be clear with regard to their assumptions about how illnesses and race are related. The research questions asked and interpretations of findings can obscure observed variations in disease and may even have harmful social consequences.

LaVeist and Lillie-Blanton found that race was used in 64% of the studies in their sample of articles published in the American Journal of Epidemiology.³ The fact that race is used so much seems to suggest

that there is a consensus about how it is defined and used in studies. In fact, there is an absence of clarity in medical dictionaries about how to define race. Anderson and Moscou (1998)⁴ found that in a structured medical literature review of US Journals, the majority of articles mention race and ethnicity (as opposed to only 20% of non-US studies), yet only one study mentioned how race was determined, and only one study mentioned the concept of racism.

Historically, one's race has been determined on the basis of the "one drop rule," meaning persons with any amount of African American blood are considered black. Given the fact that most people to this day enforce that rule informally, identifying themselves and others as "black" if they have black ancestry, it is easy to see how self-reported race and race reported by others, and the myriad of other definitions of race can easily make the concept too unclear to be very useful. Race is a social construct that is a reflection of the historic, economic, political, legal, social, and cultural conditions of a particular society, as well as racism.⁵ A further complication of the use of race as a variable is the fact that unlike education, marital status, or socioeconomic status, race is present in people's lives from the very beginning. Thus, there is a temporal factor associated with race that is quite different from the other variables. For example, one's education may be in a position of flux, just as one's income or one's marital status. Race, on the other hand, is stationary. One does not change races throughout one's lifetime. Thus the effects of race can potentially be much further reaching and cumulative and have more opportunity to influence many other aspects of one's life given its entrance into one's experience at the very beginning. In addition, race as a personal characteristic, tends to be more readily identifiable than other personal characteristics. For example, when one walks along the street, one's level of education, marital status, or even socioeconomic status is not necessarily readily identifiable. The implications of this reality would be non-significant if there were no social meaning associated with race. The odds are, however, that just as racial profiling

can occur on the highways, it may occur in the waiting rooms of doctors' offices.

A further complication of using race as a variable is the tendency to leave out measures of racism. Racism can affect health in a number of ways. It can determine social status, the degree of exposure to risk factors and resources, and directly affect health in a number of other ways.

- The current concept of socioeconomic status (SES), usually measured by a combination of education, income and employment, is not equivalent across race. On average, there are racial differences in the quality of education, and whites receive higher income returns on education than do blacks and Hispanics. ⁶ The purchasing power of a given level of income varies by race. Blacks have higher costs than whites for a range of goods and services in our society, including food, housing, and auto insurance.⁷ African Americans have higher rates of unemployment and underemployment than whites and employed blacks are more likely than their white peers to be exposed to occupational hazards and carcinogens, even after controlling for job experience and education.
- At the institutional level, racism can determine the quality and quantity of medical care. National data show that Black and Hispanics are disadvantaged compared with whites on indicators of both access to medical care and the quality of care received.

Thus, when a health issue that presents in greater numbers in one race than another is examined, larger social variables should be measured and assessed as well as behavioral or biological correlates.

Biological correlates of low birth weight have been identified for quite some time. They include having previous low birth weight infants, not gaining enough weight during pregnancy, and sickness such as pelvic infections. In addition, behaviors found to affect birth weight include smoking and alcohol use. Yet, a quick review of medical literature reveals a greater portion of studies focusing on individual-level behavioral correlates with little attention paid to either common causes of behavior or larger social processes such as unhealthy work or living conditions. To bring this discussion more to the local level, 1999 Birth Certificate Data for Hamilton County were examined as two separate sets by race. The rates of

various risk factors of expectant mothers of each race are listed below in Table 1 (adjusted for population totals).

Table 1. Rates of Infant Low Birth Weight Risk Factors in the Black and White Populations of Hamilton County (1997-1999 Years Combined).

	Black Mothers	White Mothers
Drinks Per Week (avg.)	0.3	0.5
Cigarettes Per Day (avg.)	14.1	16.2
Married (percent)	41.4	59.6
Avg. Education (Years)	8.4	9.5
Mom's Age	24.2	28.4
Trimester Prenatal Care Began	1.1	1.0

However, multiple regression analysis reveals that the same variables that significantly affect birth weight of babies in the black population, also affect birth weight in the white population (Table 2), with the exception of mothers' age.^a

Multiple regression analysis is a statistical technique where relationships between the independent variables and each dependent variable are tested while controlling for all the other variables.

For example, one equation would involve determining if number of drinks per week predicted low birth weight rates in the populations, regardless of the levels of smoking per day, non-marital status, education, or trimester that prenatal care began. Asterisks mark variables which significantly effect birth weight of infants.

Table 2. Multiple Regression Analysis of Birth Weight in Grams, Black Versus White Populations

	Standardized Beta Coefficients	
	Black Model	White Model
<i>Independent Variables:</i>		
Drinks Per Week	-.011	.007
Cigarettes Per Day	.090**	.122**
Married	.085**	.077**
Education (Years)	-.006	.012
Mother's Age	.020	.038*
Trimester Prenatal Care Began	.066**	.031*

**significant at p< .001 level

*significant at p< .05 level

^aMothers who had twins or triplets were removed from both populations due to the fact that low birth weight babies usually result from multiple births for both populations and are more often the result of fertility treatments in the white population than in the black.

Negative signs on the standardized betas indicate that as that independent variable increases, the birth weight of babies tends to decrease (when the variable is significant). Thus, as the number of cigarettes that mothers' smoked per day increase, for both models, on average, birth weight in grams decreases.

Alternately, as rates of marriage increases, for both models, on average, birth weight in grams increases. Mother's age is the only variable which seems to have an effect on birth weight in the white population but none in the black population. In other words, as mothers' age increase, on average the chances of having a higher birth weight baby increases in the white population, but not in the black population. The models differ in one more important aspect as well. For the white model, when all variables are taken together, 3.2% of the variation in birth weight can be explained. However, for the black model, only 2.1% of the variation in birth weight is explained by these variables. So, although differences in rates of smoking and other risk factors exist between the black and white populations, clearly the majority of the variation for both populations is yet to be understood, but even more so in the black model. Most importantly, while black women have low birth weight babies at nearly 2 times that rate of white women, locally, none of the risk factors used in this model can explain why the rate is so much higher in the black population than in the white population. Findings such as these can tell us much more, in the long run, than simple correlations and require a much broader understanding of the social conditions of people's lives to be able to explain.

Clearly, the issue of low birth weight babies is much more complex than the assumptions and/or study designs which have been used to understand this health outcome in the past.

Policy Implications

Policy analysts and public health researchers must be aware of the complicated nature of using

race as a variable, and understand the following: 1) How to accurately define and measure race, 2) How to use measures of race correctly in statistical analysis, 3) How to recognize a potentially racist assumption in the research questions asked, and 4) How to capture the effects of racism in the study. Because of the social and statistical complexity of race as a research variable, in the past the concept has either been incorrectly measured or it's effects greatly oversimplified. Health disparities are also often reported with no attempted explanations as to why these differences exist other than behavioral correlations. Health care providers must overcome the tendency to avoid addressing social causes because it seems too difficult or because it is not perceived to be within their realm of influence.⁸ Just as many "care plans" are now carried out in the home or in the community, not in the clinical setting, as medical personnel realize the necessity of meeting the social as well as physical needs of their patients, so too does medical research need to move more towards a more comprehensive understanding of the social factors that influence patient's lives. In addition, health care professionals should take on a greater, more consistent, and a more strategic role in ensuring that data generated from public health and medical research gets to all who can make use of it, not just to other medical providers. Last but not least, research needs to focus more on the medical community itself and less on the behaviors of individuals. It is time that we began to consider the possibility that just as racial discrimination occurs in regard to housing, education, employment, and the way that people are treated as they walk through a department store, it may also occur in the hospital emergency room and physicians' offices. It's time that the medical community considered looking both closer to home for answers to health disparities as well as further outside of traditional medical research into the social reality of people's lives.

1. Williams, David R., Risa Lavizzo-Mourey, and Rueben C. Warren. 1994 "The Concept of Race and Health Status in America" Public Health Reports 109 (1):27-41.
2. Duster, T. 1984. A Social Frame for Biological Knowledge, edited by T. Duster and K. Garrett. Ablex Publishing Co., Norwood, NJ, 1984, pp.1-40.
3. Laveist, Thomas. 1996. "Why We Should Continue To Study Race...But Do a Better Job: An Essay On Race, Racism and Health" Ethnicity and Disease 6:21-29.
4. MR Anderson and S. Moscou. 1998. "Race and Ethnicity in Research on Infant Mortality." Family Medicine 30(3):224-227.
5. Jaynes, G.D., and R.M. Williams, editors: A Common Destiny: Blacks and American Society National Academy Press, Washington DC, 1989.
6. Cooper, R., and R. David. 1986. "The Biological Concept of Race and Its Application to Public Health and Epidemiology." Journal of Health and Political Policy Law 11:97-116.
7. Robinson, J. 1984. "Racial Inequality and the Probability of Occupation-related Injury or Illness." Milbank Quarterly 62:567-590.
8. Council on Ethical and Judicial Affairs. 1990. "Black-white disparities in health care." JAMA 263:2344-2346
9. Hogan, Vijaya K., Terry Njoroge, Tonji Durant, and Cynthia Ferre. 2001. "Eliminating Disparities in Perinatal Outcomes—Lessons Learned" Maternal and Child Health Journal 5(2):135-140.



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