How Race Predicts Mortality in U.S.?

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Abstract. This article examines the link between race/ethnicity and mortality in the U.S. The authors describe the detailed patterns of health disparities by race/ethnicity, and comments on the mechanisms underlying the observed mortality disparities. They further elaborate on the strengths and weaknesses of the empirical literature associated with each proposed mechanism, providing suggestions for future research related to understanding the mortality disparities.

Introduction

The research on health differences between ethnic groups has long been focusing on black and white. However, with the increasing immigrants in recent decades, most of which are Hispanic and Asian, data collections like the national census began to incorporate more options for detailed ethnic background, and empirical researchers find it necessary to compare the multiracial groups in studies of health issues. For the analysis, we compare the following major four ethnicity groups currently in the U.S.—non-Hispanic black, non-Hispanic white, Hispanic, and non-Hispanic Asian. Due to the increase in immigrants and high birth rates, Hispanics are the largest ethnic group in the U.S. In 2004, NH whites form 67.4% of total population, followed by Hispanics (14.1%), blacks (12.2%), and Asians (4.1%) \cite{1}.

Patterns between Ethnicity and Mortality

Statistics of age-adjusted death rates from the National Center for Health in 2002 shows that, NH blacks have the highest death rates of 1147.1 per 100,000, followed by the NH whites (860.7), Hispanics (601), and Asian (517.5) \cite{2}. The black infant mortality rate is twice that of whites and Hispanic is similar to whites, the Asian infant mortality rate remains the lowest among all groups. Mixed opinions about the changes in life expectancy among racial groups overtime. Some claim there is a closing black-white gap in life expectancy at birth in the past century, from 15.8 years in 1900, to 6.9 years in 1990, to 5.9 years in 1999 \cite{3}, due to the declines in black’s mortality and mortality’s sensitivity to social programs like medicare and medicaid. However, another empirical study concludes that there has been no sustained decrease in black-white inequalities in age-adjusted mortality or life expectancy at birth at the national level since 1945, using the national data from National Center for Health Statistics and the Census Bureau from 1933 to 1999 \cite{4} They estimates the time lags in mortality and life expectancy for blacks relative to whites, employing an Autoregressive Integrated Moving Average (ARIMA) model. However, they don’t account for the fact that before 1976, governments included Hispanic with non-Hispanic whites in the white category, and only after 1988, Hispanic became a separate category in death certificate \cite{5}. Also, the validity of applying the model remains a question.

One thing for sure is that the overall average data hide from us the variances within and between those subgroups. Therefore, even the observed absolute increases in life expectancy in recent years could not support a decreasing SES disparity among ethnicity groups. Edwards and Tuljapurker go further to examine the relationship between SES inequality and variance in life expectancy, using the
World Health Organization Mortality Database and the US National Longitudinal Mortality Study [6]. The life expectancy is measured with the standard deviation of life table ages at death above age 10. They decompose the between-group and within group differences in variance in life expectancy measured by SES and ethnicity, and conclude that within group differences outweigh between group differences in variance in life expectancy. So variance in adult life expectancies are influenced by SES but not completely dependent on SES, and the high variance within groups means that SES indicators, such as income, education, provide limited protective effects for those group members.

However, the estimates of overall mortality have been bugged by data quality issues, as Rosenberg notices that “level of mortality is seriously biased from misreporting in the numerator and under-coverage in the denominator of the death rates” [7]. However, despite the biases in population and mortality data, he and other researchers also admitted that the pattern holds the same even after some minor adjustments and Asians still enjoy the highest life expectancy and the lowest death rates [8]. Still, the mortality rates for Hispanic and Asian are argued to be underestimated due to return immigrants and biased due to the selectivity of healthy immigrants into the U.S. [9]

As SES and ethnicity are usually intertwined and sometimes ethnicity is even included as an indicator of SES, it is interesting to see how those SES indicators might interact with each other. Some researchers have emphasized the importance of systematically testing for the interactions between ethnicity and SES indicators [10]. However, due to the design in data category or certain methodological issues, it might not be easy to interpret them meaningfully. As to the net effect of ethnicity, it is found that adjustment for SES substantially reduces the racial health disparity by 20-70% [11], yet not eliminates racial disparity in health.

Mechanism Explaining the Link between Ethnicity and Mortality

It is recognized that race/ethnicity itself is not linked to health, but what the race represents in terms of geographic origins, cultural, economic and political factors associated with health.

SES and Access to Health

Tied to the frequently discussed fundamental cause theory, the lower SES contributes to the higher death rate for black. Data show that weekly wage and salary income dropped for all black and Hispanic males below the 90th percentile of income between 1979 and 1987 [12]. So there are enlarging income gaps by race/ethnicity, which increases their disadvantage in mortality risks according to the fundamental cause theory. Also, ethnicity groups tend to have limited access to health care, or less likely to utilize the health care than whites. Compared to others, Hispanics are more likely to go without a regular health care, and more frequently use hospital emergency rooms as their primary source of medical service. Compared with other ethnic groups, Asians have the highest levels of income, education and occupational status [13], even exceeding that of whites. The higher SES and the fact that Asian immigrants are positively selective into the U.S. determine that Asian group enjoy the best health status and have the least death rates.

Racism

An increasing effort has been made to show empirically and theoretically that racism is a crucial determinant of the well-being for those oppressed race/ethnicity groups, especially blacks. It is defined as the “ideology of superiority, negative attitudes and beliefs toward racial and ethnic groups, and differential treatment of members of those groups by both individuals and societal institutions” [14]. (1) It could render blacks less equipped in labor markets with fewer skills or knowledge from school education, or less educational return for blacks than whites. Even equalizing levels of education could not bridge the racial gap in income earning. (2) It limits access to both the quality and quantity of health-related services like public care, housing, and recreational facilities. For example, they have only limited housing options due to the discrimination from real estate agents and home sellers [15]. (3) The psychological stress hypotheses associated. Perceptions of racism would impact
both physical and mental health for race/ethnicity groups, pushing them to engage in addiction or violence, which increases the likelihood of death rate. An empirical study, using longitudinal data from the National Health and Nutrition Examination Survey and its subsample, shows that psychological stress is associated with mortality of different causes [16]. Blacks are most vulnerable to the cumulative disadvantage of psychological distress than other ethnicity groups due to the historical background.

**Social Capital, Neighborhood Effects and Life Style on Mortality**

Residential concentration is linked to factors like social capital and life style. Social capital refers to the various coping resources, such as networks of family members, community support, etc. Hispanic and Asian, especially for those recent immigrants, tend to live in ethnic enclaves, as they heavily rely on the social networks to either find a place to live or information of available jobs. Empirical findings show that those ethnic enclaves could be health protective to ethnic groups as more social support among neighbors [17], and sometimes preferred by some Asian subgroups even though they could afford moving to better neighborhoods [18]. On the other hand, ethnic enclaves are associated with low level of integration into the major society (counter to the acculturation expectation).

While compared with other ethnic groups, NH blacks are more likely to concentrate in urban residential segregated areas. Those areas are usually deprived neighborhoods, with less public resources, lower standard living conditions, crowded with disturbing smells and sounds, all these being harsh and hostile to their well-being. Empirical evidence shows that residential segregation has a strong link to adult all-cause and infant mortality [19], and is the “cornerstone of black-white disparities in health status” as it perpetuates the racial health disparity in the U.S. [20] The research on neighborhoods’ effect on health has been troubled with methodological issues, as the measures for residential segregation vary, and could not generate consistent patterns of health outcome based on different geographic levels.

The neighborhood environment, to a large extent, determines residents’ perception of safety and willingness to walk out. Empirical evidence show that Asian immigrants are less likely to participate in physical activities, though they tend to have healthier diets and smoke less compared with blacks and Hispanic. Smoking is much prevalent among Hispanics and blacks than whites. Probably due to the psycho-social process mentioned above, smoking and eating too much would reflect a lack of mastery or control over occupational, familial or residential stress.

**Early Life Perspective**

Tied to the above mentioned life course perspective, lower risks of heart disease in children is positively related to breast feeding. Blacks are less likely to have breast feeding than whites; feeding rates also decline for Hispanic and Asian immigrants with assimilation [21]. Therefore, preventative health care should be more directed at births to achieve a better health outcome, especially targeted at those race/ethnicity groups with lower SES.

**Future Research Directions**

Previous empirical evidence show that medical interventions aimed at altering the known risk factors without addressing the fundamental SES inequality would be of limited effect [22]. So what we should do in future research include: 1) to have a better methodological design to track changes in the SES across race/ethnicity groups overtime, both incorporating new SES indicators and improving data quality for race/ethnicity category; 2) to collaborate with researchers from other fields to explore theoretically the mechanisms and processes how those risk factors were embodied “under skin”; only until we have adequate knowledge of the whole process from SES to health outcomes, could we systematically launch a series of timely interventions taking into account the between group difference and within group difference., instead of the thought that health disparity could be solved by “a strike once and for all”. Though requiring for long-term efforts to counter health disparities, to begin with the education factor would be a practical approach given its intermediating role with other
indicators. Also mass media should take the initiative to fight against racism, with an aim to create a equal-opportunity atmosphere.

References

[1] William C. Cockerham, Medical Sociology [M]. Person Education, Inc., 2007.
[2] National Center for Health Statistics, 2005. http://www.cdc.gov/nchs/
[3] R. N. Anderson, P. B. DeTurk, United States life tables, 1999 [J]. National Vital Statistics Reports, 2002, 50(6):1-40.
[4] Robert Levine, James Foster, Fullilove Mindy, Nathaniel Briggs, Baqar Husaini, Charles Hennekens, Black-white inequalities in mortality and life expectancy, 1933-1999: Implications for healthy people 2010 [J]. Public Health Reports, 2001, Sept-Oct 116: 474-483.
[5] William C. Cockerham, Medical Sociology [M]. Person Education, Inc., 2007.
[6] Ryan D. Edwards, Shripad Tuljapurkar, Inequality in life spans and a new perspective on mortality convergence across industrialized countries [J]. Population and Development Review, 2005, 31(4): 645-674.
[7] H. M. Rosenberg, J. D. Maurer, P.D. Sorlie, Johnson, C. Scott, Quality of death rates by race and Hispanic origin: A summary of current research [J]. Vital and Health Statistics, 1999, 2(128):1-13.
[8] Robet A. Hahn, Steven Eberhardt, Life expectancy in four U.S racial/ethnic populations: 1990 [J]. Epidemiology, 1995, 6(4): 350-355.
[9] Richard G. Rogers, Robert A. Hummer, Patrick Krueger, Adult mortality [C]// Dudley Poston, Michael Micklin (Eds.), Handbook of Population. New York City: Springer Publishing, 2005: 283-309.
[10] Ronald C. Kessler, Harold W. Neighbors, A new perspective on the relationships among race, social class, and psychological distress [J]. Journal of Health and Social Behavior, 1986, 27(2): 107-115.
[11] C. Smaje, Race, ethnicity, and health [C]// D. E. Bird, P. Conrad, A. M. Fremont (Eds.), Handbook of Medical Sociology. Upper Saddle River: Prentice-Hall, Inc., 2000: 218-243.
[12] P. Karoly, Mechanisms of self-regulation: A systems view [J]. Annual Review of Psychology, 1993, 44: 23-52.
[13] William C. Cockerham, Medical Sociology [M]. Person Education, Inc., 2007.
[14] D. R. Williams, Socioeconomic differentials in health: A review and redirection [J]. Social Psychology Quarterly, 1990, 53: 81-99.
[15] D. R. Williams, C. Collins, Racial residential segregation: A fundamental cause of racial disparities in health [J]. Public Health Reports, 2001, 116(5): 404-416.
[16] Kenneth F. Ferraro, Tariqah A. Nuriddin, Psychological distress and mortality: Are women more vulnerable?[J]. Journal of Health and Social Behavior, 2006, 47(3): 227-241.
[17] T. L. Osypuk, A. Diez-Roux, C. Hadley, N. R. Kandula, Are immigrant enclaves healthy places to live? The multi-ethnic study of atherosclerosis [J]. Social Science and Medicine, 2009, 69: 110-120.
[18] John R. Logan, Wenquan Zhang, Richard D. Alba, Immigrant enclaves and ethnic communities in New York and Los Angeles [J]. American Sociological Review, 2002, 67(2): 299-322.
[19] K. White, L. N. Borrell, Racial/ethnic residential segregation: Framing the context of health risk and health disparities [J]. Health and Place, 2009, 17: 438-448.

[20] D. R. Williams, C. Collins, Racial residential segregation: A fundamental cause of racial disparities in health [J]. Public Health Reports, 2001, 116(5): 404-416.

[21] C. Jeffrey, Formula for failure [J]. Chicago Reporter, 1993, 22:1, 6-11.

[22] S. L. Syme, The social environment and health [J]. Daedalus, 1994, 123: 79-86.