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Research in the Sociology of Health Care
Volume 27

Social Sources of
Disparities in Health
and Health Care and
Linkages to Policy,
Population Concerns
and Providers of Care

Jennie Jacobs Kronenfeld
Editor



**SOCIAL SOURCES OF DISPARITIES
IN HEALTH AND HEALTH CARE
AND LINKAGES TO POLICY,
POPULATION CONCERNS AND
PROVIDERS OF CARE**

RESEARCH IN THE SOCIOLOGY OF HEALTH CARE

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RESEARCH IN THE SOCIOLOGY OF HEALTH CARE
VOLUME 27

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AND HEALTH CARE AND
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POPULATION
CONCERNS AND
PROVIDERS OF CARE**

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India – Malaysia – China

Emerald Group Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2009

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British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-1-84855-834-2

ISSN: 0275-4959 (Series)



Awarded in recognition of Emerald's production department's adherence to quality systems and processes when preparing scholarly journals for print



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SECTION I
DISPARITIES IN HEALTH
AND HEALTH CARE
BASIC PERSPECTIVES

SOCIAL SOURCES OF DISPARITIES IN HEALTH AND HEALTH CARE: AN INTRODUCTION TO THE VOLUME

Jennie Jacobs Kronenfeld

ABSTRACT

This chapter provides an introduction to volume 27, Research in the Sociology of Health Care, Social Sources of Disparities in Health and Health Care and Linkages to Policy, Population Concerns and Providers of Care. It introduces the topic of social sources of disparities in health and health care and discusses the approach to this issue in the United States based on federal government efforts as well as based on research by medical sociologists, political scientists, epidemiologists and researchers in health care more generally, such as those in public health. This chapter serves as an introduction to the volume also. As such, the chapter explains the organization of the volume and briefly comments on each of the chapters included in the volume.

This chapter provides an introduction to volume 27 of the Research in the Sociology of Health Care series. This volume is entitled Research in the Sociology of Health Care, Social Sources of Disparities in Health and Health Care and Linkages to Policy, Population Concerns and Providers of

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care**
Research in the Sociology of Health Care, Volume 27, 3–17
Copyright © 2009 by Emerald Group Publishing Limited
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027003

Care. The overall volume is divided into five sections. The first section is this introductory article. The second section includes five chapters that discuss racial and ethnic factors in disparities in health and health care delivery including some that focus on racial disparities and others that focus on racial and ethnic disparities, some more theoretically and others looking more specific issues such as complementary and alternative medicine (CAM) or non-adherence to suggested treatments. The third section includes three papers that examine income, socioeconomic status (SES) and cultural capital as factors in health and health care disparities. One focuses on education, one on childhood poverty as an influence later in life and one on cultural capital. The fourth section includes two chapters that look at issues of provider and facilities that provide care. The last section examines some locally oriented studies in health and health care disparities, with one focusing on community approaches, one focusing on issues of rural residents and one focusing on the Vietnamese community in New Orleans after hurricane Katrina. The last section of this chapter reviews each of these sections in more detail, following several sections that discuss disparities in health and health care, measures of SES and the government role in disparities research more generally.

DISPARITIES IN HEALTH AND HEALTH CARE

American society has many myths about health and health care, and one of the more strongly held myths has been that the belief that the United States has the best health care system in the world and that, as one of the wealthiest nations, we therefore must have the best health care available to our citizens. I call this a myth because researchers in medical sociology, public health and health services research have emphasized for decades that America tolerates extremes of wealth and poverty much greater than most European countries. This toleration of extremes covers not just income, but extends to the approach to the delivery of social and health services, as well as other consumer goods. More than 40 million Americans do not have any health insurance and thus have limited access to expensive health care services, since their major ways of obtaining care are visits to emergency rooms and use of cash for doctor visits, when essential (Morone & Jacobs, 2005b). Even more may have inadequate health care coverage, so that if a serious illness were to occur, the person would have a very hard time finding care except on an emergency basis and paying for that care. For most people, having health insurance relates to having a job, and in a time of a declining economy and

serious job losses in the United States, as people lose jobs, they also lose their health insurance. Even if people have coverage for major health care problems, many people do not have insurance that covers all needs (many insurance plans provide limited coverage of pharmacy costs, for example, a growing area of importance in health care over the past 30 years). Also, many areas of health care such as vision care, dental care and audiology services are often not covered. Although these are not life-threatening health care concerns, they are health care concerns that impact quality of life and even ability to achieve. A child who cannot see well has trouble succeeding in school. A person in pain from tooth problems has trouble concentrating on tasks. Poor oral health can be a contributor to lack of adequate nutrition among the elderly. Lack of access to hearing aids (which are not covered by Medicare, the federal program that does provide access to health care services for most of the elderly in the United States) increases the social isolation of the elderly.

From a societal perspective, the issues of inequality in the overall economy lead to what some have described as an American Dilemma of why the United States is not number one in overall health statistics (Morone & Jacobs, 2005a; Kawachi, 2005; Jacobs, 2005). Although the United States spends a greater share of its gross domestic product on health care than other nations, many people (estimates are 15.9 percent of the U.S. population) lack health insurance coverage (Luft, 2007). On many health measures, the U.S. is often no better and at times worse than many other nations (World Health Organization, 2000). Kawachi (2005) points out that on 16 different indicators of health status, the United States ranks twelfth overall when compared with the 13 most economically advanced countries, behind such countries as Japan, Sweden, Canada, France, Australia, Spain, the United Kingdom and Denmark. This is true for percentage of low birth weight (13th), neonatal and infant mortality (13th) and years of potential life lost (13). The United States does a little bit better on life expectancy measures, ranking eleventh for life expectancy at age 1 for females but only twelfth for males and seventh at life expectancy at age 65 for females and seventh for males. Not until people reach the age of 80 is the United States near the top of international statistics. By 80 years of age, U.S. life expectancy is third for both males and females. Worse yet, these mediocre comparative results are not the result of limited spending on health care services. On that measure, the United States ranks at the top. The United States does spend more on health care than any other nation, whether the measure used is the dollars spent per capita or the percent of gross domestic product spent on health care.

Many health care experts agree that part of the reason for disparities in health and health care use in the United States are large and exceptional levels of economic inequality and poverty (Kawachi, 2005; Jacobs, 2005). Race, income and market ideology are all sources of health care inequalities (Stone, 2005). Disparities by characteristics such as gender, state residence, immigrant status and type of illness are all factors in health care disparities in the United States, according to Stone (2005). In fact, these different characteristics of people, their location and the diseases that disadvantage people in receipt of health care services become cross-cutting divisions that weaken political support for reforms to make the system more just (that is, exhibiting fewer inequalities across groups and social characteristics). Often we think first of race and income as the most important fault lines that divide people in American society. Stone (2005) argues, however, that market ideology is the most important obstacle to health care equity because, under market theory, distribution will follow economic demand rather than need.

Many other countries have also addressed one of the important structural issues that explain some health care inequalities and disparities in the United States, access to health care services. The United States has addressed this only for selected groups in the population, so that almost all elderly do receive Medicare, which guarantees access to basic health services, although there are many critiques of the limitations of Medicare as addressing all the health care needs of the elderly. Even with the newer prescription drug coverage provision, drug care costs are not all covered and issues of long-term care coverage are one of the glaring absences in the Medicare system. For the poorest Americans, Medicaid provides coverage to basic health care services, although both eligibility and services available vary from state to state as Medicaid is a joint federal-state health care program in the United States. For children of the working poor, State Children's Health Insurance Program (SCHIP) provides coverage to basic health services. In many states, this is heavily modeled on the state's Medicaid program and provides similar services and some similar issues of limited numbers of physicians that may be willing to accept the Medicaid fee payments and participate in the programs. The recent reauthorization of SCHIP under Obama means this program will continue and will provide important coverage to many children in the United States. The program may expand in a number of states, thus increasing access for some children. However, for the bulk of the adult, working-age population, there are no government programs that assure access to health care services and coverage is related to one's holding a good job that provides health care benefits, a problematic issue for a

growing number of Americans in this time of declines in the economy both in the United States and worldwide. [Gottschalk \(2005\)](#) argues that one of the major reasons in the United States why health care inequalities have not resulted in a social movement or reform coalition is the weak role of organized labor, especially in recent years. Labor unions have historically been weak in the United States (especially as compared to European countries), and there has not been a major political party specifically identified with the labor movement, although [Gottschalk \(2005\)](#) and others have pointed out that labor has been important in health care reforms in the United States in the past ([Rosner & Markowitz, 1997](#)). The development of early prepaid group practices and some important pushes for reform in the U.S. health care system such as Medicare were helped greatly by the labor movement in the United States. Our current system of employment-based health benefits in the United States resulted from collective bargaining agreements begun during World War II and in the 1950s. Although historically organized labor in the United States was an advocate of national health insurance, beginning in 1978, organized labor was willing to push private sector solutions that used government mandates and employer mandates as the way to ensure health insurance coverage for more people. [Gottschalk](#) argues that divisions within the labor movement and the distractions of the North American Free Trade Agreement (NAFTA) debates made it difficult for the labor movement to be aggressive in its support of the proposed Clinton health care reforms in the early 1990s. This allowed the opponents of the proposed Clinton legislation to define and dominate the public debate. Over the past 30 years, the U.S. labor movement has grown even weaker, so it is unlikely to be the major source of pushing for any health care reform in the future.

Legal issues also impact health disparities. In other areas of social policy, the right to receive services is much clearer. Welfare is a government entitlement program and education is a legal requirement, but health care has traditionally been provided by the private sector with voluntary contractual obligations and in recent decades the courts have been reluctant to confront health care disparities ([Jacobson & Selvin, 2005](#)). There are some legal provisions to ensure care and thus limit disparities in health care in the U.S. Medicare that provides health care coverage for almost all Americans who are 65 and older. Medicaid provides health care coverage for many but not all poor people who meet state-defined eligibility requirements. SCHIP provides coverage for many children of the working poor. In recent decades, the courts tend to defer to the political branch for most issues of health care policy. There have been some expansions of the

federal government role in helping to reduce inequities in access to health care services (Grogan & Patashnik, 2005; Kronenfeld, 2006). The two major ones have been expansions for children or pregnant women and expansions for the elderly. Incremental expansions to cover some children and pregnant women were enacted between 1984 and 1990 and SCHIP expanded the coverage for children of the working poor, although in operation there is important variability in how the program operates from state to state. Medicaid has become the most important payer of long-term care services and is providing nursing home care for many people who were not “poor” for most of their working lives, but are unable to meet the high expenses of nursing home coverage.

Not all issues of health care inequality occur within the United States, although that has been the focus of most of this review. Research has documented differences in other countries also, illustrating that access to health care services through universal health insurance helps to lower disparities, but does not eliminate them all. Some of this research has been sociological, following long-standing interests in medical sociology in examination of race, ethnicity and social class as factors that impact variation in health status and receipt of health care services (Smaje, 2000). A Canadian study that examined direct cardiac care found that SES was at the heart of health care disparities in Canada, even within a system that assures access to basic care for all (Basky, 2000). In Ontario, Canada, patients living in neighborhoods with the highest average incomes received coronary angiography 23 percent more often and had 45 percent shorter waiting times for treatment than did patients living in the lowest-income neighborhoods.

SOCIAL SOURCES OF DISPARITY AND SOCIOECONOMIC STATUS

In sociology, SES is one of the most discussed concepts and one of the most important sources of disparities in society. Other important sources of disparity include racial/ethnic differences, gender and geographic location. For sociologists, there are many different ways to measure SES, but one commonly discussed theoretical approach is to talk about components of SES, including income, occupation and education. As one moves away from theoretical discussions to the actual operationalization of the concept of SES, income and education are often used more frequently than occupation, since they are simpler variables to collect and categorize.

Income, in some ways, represents the simplest and, many would argue, the most important component of SES. Income determines how much money people have available to spend on all aspects of their life, including various consumer goods and health care. The total amount of income is quite important, and even small additions to income bring added benefits that improve health, an idea that has been termed a “neo-material” view of the relationship between income and health (Lynch & Kaplan, 2000). Neo-material conditions directly relate to one’s health risk behaviors, psychological status and social determinants of health (Lynch, Kaplan, & Salonen, 1997). Most means-tested social service programs in the United States rely on income, often as related to family size, to determine eligibility to benefits. Although occupation in some ways might be seen like the most fundamental aspect of SES, because income for most people is so linked to occupation, both the complexity of measurement of occupation and the reality that a simple description of occupation does not always capture income and lifestyle variation well has meant that, in recent decades, occupation is less often used as an important indicator of social status, especially when social status is being used as a predictor of something else, such as in the case of variations in health and health status.

Certainly, education level may be the simplest aspect of SES from a methodological perspective. Even for this variable, there are some complexities in recent decades. Whereas at one point in time, a high school education indicated a high level of educational achievement, today with mandatory school attendance laws, often through 16 years of age in most states, a lack of a high school education is an indicator of those who have dropped out of the high school education system. Completion of college among youth today reflects the same type of SES level of attainment in education that high school graduation did several generations earlier. Having education beyond the bachelor’s degree does indicate greater achievement, although the correlation between income and education for those with a college education or beyond is not always straightforward. Many business people with a BS or BA degree earn more per year than people with master’s or even Ph.D. degrees, especially if those degrees are in areas of lower paying fields such as social services or humanities.

In studies looking at health disparities, however, some researchers have argued that education may be the most useful indicator of social status when examining health disparities. In early studies in health education, this was often true for use of preventive health care services and health prevention actions. In a recent issue of the journal *Health Affairs* that focused on health disparities, several articles and comments focused on the impact of

education (Robinson, 2008; Meara, Richards, & Cutler, 2008), as does the Cardarelli's chapter in this volume. Certainly education is one important social factor to examine when focusing on disparities in health and health care.

THE FEDERAL GOVERNMENT, NEWER RESEARCH AND HEALTH AND HEALTH CARE DISPARITIES

In the past decade, much attention at both the federal government level and in some of the large private foundations that are important funders of research in health care has been given to the issue of health care disparities and inequities (Kaiser Family Foundation, 2003; National Healthcare Disparities Report, 2003; Smedley, Stith, & Nelson, 2003). The National Healthcare Disparities Report (2003) shows that individuals from lower socioeconomic backgrounds and racial and ethnic minorities with varying backgrounds are more likely to report unmet health care needs and less likely to have a consistent source of health care, receive routine care and benefit from insurance coverage. A focus on some of these issues is much older. For example, about 20 years ago, the federal government began to release reports that examined issues of minority health. These early efforts within the government as well as within sociological, social science and public health research led to legislation that mandates a greater interest in issues of health care disparities and inequalities.

Within the federal government, one of the pushes for more research on health care inequalities came from the passage of Public Law 106-129, the Healthcare Research and Quality Act of 1999. That law directed the Agency for Healthcare Research and Quality (AHRQ) to develop two annual reports, one focused on quality and the other on disparities. AHRQ was to track prevailing disparities in health care delivery as they relate to racial and socioeconomic factors among priority populations such as low-income groups, racial and ethnic minorities, women, children, the elderly, individuals with special health care needs, the disabled, people in need of long-term care, people requiring end-of-life care and places of residence (rural communities). The first National Healthcare Disparities Report (2003) built on some previous efforts in the federal government, especially Healthy People 2010 (U.S. Department of Health and Human Services, 2000) and the Institute of Medicine (IOM) 2002 Report, Unequal Treatment: Confronting Racial and Economic Disparities in Healthcare

(Smedley et al., 2003). The elimination of disparities in health was a goal of Healthy People, 2010. Unequal Treatment extensively documented health care disparities in the United States and focused on those related to race and ethnicity. One weakness of the report was there was not a focus on disparities related to SES. The IOM report on Unequal Treatment also looked at factors related to providers of care and argued providers' perceptions, and from that, their attitudes toward patients can be influenced by patient race or ethnicity (Smedley et al., 2003).

The National Healthcare Disparities Report (2003) did have a focus on the ability of Americans to access health care and variation in the quality of care. Disparities related to SES were included, as were disparities linked to race and ethnicity, and the report also tried to explore the relationship between race/ethnicity and socioeconomic position. There were a number of key findings from the report. First, inequality in quality of care continues to exist. These disparities often are particularly true for some more serious health care problems, such as minorities being diagnosed with cancer at later stages, less often receiving optimal care when hospitalized for cardiac problems, and higher rates of avoidable hospital admissions among blacks and poorer patients. Differential access to health care often leads to disparities in quality of care actually received. In addition, opportunities to provide preventive care are often missed. The report closes with a call for more data, more research and the linkage of those to policy within the United States. The knowledge about why disparities continue to exist is still limited, and data limitations may limit improvement efforts. Despite these concerns, improvement is possible, and some examples are provided using California subpopulation data that demonstrate how targeted some prevention efforts to specific groups can yield useful results.

In 2005, the third [National Healthcare Disparities Report \(2005\)](#) was released. One advantage of continuing reports is that they allow a comparison to previous years. This 2005 report focused on findings from a set of core report measures. The two measures of access covered were facilitators and barriers to care and health care utilization. The overall summary indicated that disparities still exist, but some disparities are diminishing, an encouraging result, but one that clearly leaves opportunities for further improvement. Disparities remain in both areas of access, all areas of quality, and across many levels and types of care including preventive care, treatment of acute conditions and management of chronic disease. This applies to various specific clinical conditions including cancer, diabetes, end stage renal disease, heart disease, HIV disease, mental health and substance abuse and respiratory diseases.

Looking at access more specifically, major issues of disparity occur for poor people and Hispanics, with lesser but important issues for Blacks, American Indians and Asians. Poor people have worse access to care than high income people for all eight core report measures. Hispanics have worse access for 88 percent of the core report measures, whereas Blacks and American Indians have worse access on half of the measures. Asian Americans have worse access on 43 percent of the measures. The 2005 report also tracks changes in the core measures over time. For each core report measure, racial, ethnic and socioeconomic groups were compared with a designated comparison group at various points in time. For racial minorities, more disparities in quality of care were becoming smaller rather than larger, whereas for Hispanics, 59 percent were becoming larger and 41 percent smaller. For poor people, half of disparities were becoming smaller and half were becoming larger.

In addition to federal reports, articles on these topics are beginning to appear across the sociological and health sciences literature. In an issue of the *Journal of the American Medical Association* in 2007, there were a number of articles that discussed issues of universal health care coverage and linked that to health disparities and access to care (Luft, 2007; Lurie & Dubowitz, 2007; Fontanarosa, Rennie, & DeAngelis, 2007).

Lurie and Dubowitz (2007) argued that social factors related to disparities in care relate directly to access to care, which then leads to better health. They also argued that universal access to care might be called universal access to health, given this link. Luft (2007) called for fundamental restructuring of the payment system within health care to achieve both universal coverage and improved efficiency. Lurie and Dubowitz (2007) pointed out that one key contributor to disparities in health was differential access to care, as linked to differences in rates of uninsurance. Hispanics and Blacks have higher rates of uninsurance (34 percent and 21 percent), as compared to rates of 13 percent among whites (Lurie & Dubowitz, 2007). As these articles point out, reform in the U.S. health care system could play an important role in reduction of health care disparities and inequalities in the future. Whether reform will occur is not clear. Although President Obama has discussed health care reform in the United States and has said he will push for providing health insurance coverage to a greater number of Americans, although not necessarily to all, given the current economic crises, it is difficult to assess whether such reform will be successful.

More recently, a special issue of *Health Affairs* also dealt with the issue of health care inequalities. In a blog comment related to that special issue, in March 2008, Brian Smedley (2008) pointed out that the media often reflects

the idea that health inequality (that is, differences in health status among population groups) is really a matter of biology and bad genes or, at times, bad behaviors of people that might interact with genes, whereas health care inequality (that is, differences in access to and quality of health care) is more often seen as related to social factors and may become a matter of public discussion and concern, but often only for short periods of time (Smedley, 2008). Smedley (2008) believes that this was the case with the IOM report, which, despite receiving much discussion in policy and academic circles, did not lead to the passage of any significant new federal legislation or major adoption of the recommendations of that report by the Department of Health and Human Services. In an introduction to the issue on health disparities, editor of the journal James Robinson (2008) discusses two key social determinants of health, education and neighborhood. He points to the fact that neighborhoods are segregated by race and ethnicity more than by income. He also points out that poor and segregated neighborhoods lead to various concerns and processes that increase risk and mortality, as demonstrated by a study of breast cancer by Gehlert, Sohma, Sacks, and Mininger (2008). Moreover, the most important gains in both mortality and life expectancy have occurred among the best educated Americans (Meara et al., 2008). In this chapter, Meara et al. (2008) examine educational disparities in mortality and life expectancy among non-Hispanic blacks and whites in the 1980s and 1990s. Even though there has been substantial funding and attention directed to groups with low SES, within race and gender groups, the educational gap in life expectancy is rising, mainly because of rising differentials among the elderly. For almost all groups (black males being the only exception), all recent gains in life expectancy at age 25 have occurred among better-educated groups, raising educational differentials in life expectancy by 30 percent.

In the March/April 2008 issue of *Health Affairs*, some of the largest gaps in health care were found in areas such as mental health (McGuire & Miranda, 2008) and oral health (Fisher-Owens, Adams, & Chung, 2008). Unmet dental care needs are the most prevalent unmet health care need among children. Moreover, many public sector programs do not cover dental care. For example, in the SCHIP, dental benefits are not mandated and coverage varies from state to state. In states that do cover dental care, there is often a required copayment for restorative dental services, a barrier to care for many children of the working poor, the focus of the SCHIP program. Dental benefits are also not a standard part of Medicaid, being optional for adults under state Medicaid programs and Medicare covers almost no dental care. In contrast, in mental health disparities, with the

exception of Puerto Ricans, all the subgroups of minorities reported lower rates of lifetime mental disorders than white Americans reported. Similar advantages existed for the presence of a mental disorder in the past year, although Latino and black rates were relatively close to that of whites (McGuire & Miranda, 2008). Understanding the role of social factors in disparities in health and health care is complex and multi-faceted, and hopefully the new chapters in this volume, briefly described later, help to contribute to the growing literature on this topic in the social sciences and in the health sciences.

REVIEW OF ORGANIZATION OF THE BOOK

As mentioned previously, this volume is divided into five sections. The first section, *Disparities in Health and Health Care: Basic Perspectives*, consists only of this introductory article. The second section on *Racial and Ethnic Factors in Disparities in Health and Health Care Utilization* includes five articles. The first three each focus mostly on issues linked to racial and ethnic factors in disparities, whereas the last two focus on race and ethnic factors as well as other social factors such as SES and look at more specialized types of health care usage. Saperstein looks more critically at the issue of how race is conceptualized and uses data from the 1988 National Survey of Family Growth to compare differences between interviewer-classified race and self-identified race in terms of disparities in health screenings. Stepanikova and Cook investigate racial and ethnic patterns in perceived non-adherence and compare Whites, Blacks, Hispanics and Asian health care users and finds that Blacks and Hispanics were less likely to be non-adherers as compared to Whites. Good patient–physician communication was associated with better adherence for Whites and Hispanics. Chattopadhyay examines disparities in primary care by race and ethnicity among Medicaid children in California. She finds that even when financial access is ensured by Medicaid, primary care quality varies by race and ethnicity. Kronenfeld and Ayers look at various social sources of disparities in the use of CAM and find interesting patterns of use of different types of CAM and amounts of CAM by race/ethnicity and some other social factors. As with the Kronenfeld and Ayers chapter, Metoyer also looks at race/ethnicity and another social factor, socioeconomic disparities, and looks at variation in use of a different type of care, applying the question of disparities to use of long-lasting contraceptives. Using data from the National Survey of Family Growth, she finds interesting patterns both by

race/ethnicity and by education and health coverage. This chapter leads nicely to the next section of the book, which focuses on social factors such as income and SES.

The third section is entitled *Income, SES, and Cultural Capital in Disparities in Health and Health Care Delivery*. This section includes three articles. One focuses on the role of education, one on the impact of childhood poverty on later life health and one on the role of cultural capital in health outcomes. The first article by Cardarelli and a team of other authors provides a critical review of the evidence for the connection between education and health, looking especially at chronic illness. The chapter by Lindsay looks at the influence of childhood poverty on the self-management of health disease in later life. This chapter links in with a growing literature about the impact of childhood factors on later health and explicitly looks at poverty while growing up to see how this impacts how people manage a disease such as heart disease. Bugyi tries to clarify the underlying mechanism of the relationship between SES and health outcomes by looking at individuals' behaviors and attitudes, especially in relation to physicians and an impact on quality of care. The data come from a study of hemodialysis patients in suburban New York, but has important implications beyond this narrow group of patients in its application of Bourdeau's concept of cultural capital.

The fourth section includes two chapters on *Providers, Facilities and Health Disparities*. The first chapter by Lockhart, Klopfenstein and Giles-Sims looks at various nursing facility measures to learn more about disparities in quality of care. Cross-sectional, panel data are used to compare states on multiple indices of both quality and enforcement stringency. They argue that at least some of the factors responsible for important disparities in nursing facility care are within the capacity of states to improve and even rectify in a short time, an important policy implication of their work. Hinze, Webster, Chirayath and Tamayo-Sarver look at patients in emergency departments and examine whether the idea of patient "deservingness" in the eyes of the physicians providing care impacts the decision to prescribe opioid analgesics. Both aspects of an injury, relationships with providers and other factors such as former and current drug and alcohol use all impact the prescribing practices.

The last section, Part 5, deals with *Locally Oriented Studies in Health Disparities* and includes three chapters. The first chapter by Hewitt takes a broad approach to a local topic, looking at community approaches for eliminating health disparities. The chapter includes both a conceptual review of the topic and an analysis at the macro-level of major community trends that focus on eliminating health disparity outcomes. The second chapter by

Grimm, Smith, Theodori and Luloff examines the effects of household assets upon rural residents' self-reported physical and emotional well-being. Using data gathered in four rural Pennsylvania communities, the chapter demonstrates the importance of considering the collective health needs of rural households by relating that to affordability and sustainability. The last chapter deals with a very unique local situation, but provides a very interesting look at the complexities of health care disparities in specialized settings and groups. Do and Mai look at disparities in health care among Vietnamese Americans in New Orleans and the impacts of Hurricane Katrina. Certainly, the situation of a major, devastating hurricane such as Katrina is a very unique event. This chapter looks at use of routine health care and disparities by SES among the Vietnamese in New Orleans and shows how these differences have been changed as a result of Hurricane Katrina. Sometimes unusual crises can help us understand factors that may impact health disparities, and this chapter and its unusual topic helps to close this volume through the consideration of this specific setting.

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SECTION II
RACIAL AND ETHNIC FACTORS IN
DISPARITIES IN HEALTH AND
HEALTH CARE UTILIZATION

DIFFERENT MEASURES, DIFFERENT MECHANISMS: A NEW PERSPECTIVE ON RACIAL DISPARITIES IN HEALTH CARE

Aliya Saperstein

ABSTRACT

For nearly two decades, researchers across the disciplines of social science and medicine have grappled with how to conceptualize and measure race to better explain racial inequality. Improvements have been made, but most scholars continue to assume that a “correct” measure of race exists or that different estimates between measures are essentially quantitative errors. However, obtaining different estimates from different measures of race might instead suggest that there are substantively different explanations for the disparities. I explore this possibility by revisiting conventional findings about racial differences in reported health screenings using data from the 1988 National Survey of Family Growth, which includes both the respondent’s self-identification and how she was classified by the survey interviewer. Regression results indicate that differences in interviewer-classified race are more closely related to disparities in health screenings than self-identification; these findings complement recent research on the role of racial discrimination and

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 21–45
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027004**

implicit prejudice in clinical encounters and highlight the importance of using multiple measures of race in health care research.

At the turn of the new century, LaVeist (2000) reiterated his call for researchers interested in racial disparities to move away from the simple description of racial difference and toward the explanation of racial inequalities in health and health care in the United States. Since then, several intriguing, and sociologically informed, lines of research have emerged, which examine the role of racial discrimination in perpetuating health disparities. One set of studies examines whether experiencing racial discrimination might be a potential stressor that takes a toll on an individual's physical and mental health (e.g., Taylor et al., 2007; Geronimus, Hicken, Keene, & Bound, 2006). Another considers race as a factor in health care encounters and not just as a stratifying principle that stops at the clinic door (e.g., Burgess, van Ryn, Dovidio, & Saha, 2007; Cooper, Beach, Johnson, & Inui, 2006; Malat, 2006).

This increased attention to the role race plays in everyday interactions – between employers and employees, teachers and students, clerks and customers, and of course, doctors and patients – is an important step in moving from description to explanation. But with it comes another important consideration: race itself is negotiated and imposed through these same interactions (Omi & Winant, 1994). Race is not an intrinsic characteristic of individuals that will necessarily be the same across contexts (Davis, 2001) or over the life course (Penner & Saperstein, 2008). It is a marker of difference with many dimensions, including how individuals describe themselves and how they are described by others. Put simply, racial categories cannot be taken for granted. Part of unraveling the mechanisms behind racial disparities in health and health care involves identifying which aspects of a person's "race" – their identity, their appearance, their ancestry – matter when.

Thus, rather than assuming that a single "correct" measure of race exists, I argue that researchers should examine various measures in combination. The utility of this approach is demonstrated by revisiting conventional findings about racial differences in reported health screenings using data from the 1988 National Survey of Family Growth (NSFG), one of the few representative surveys of U.S. adults that include both the respondents' racial self-identification and their racial classification according to the interviewers. Once perceived (i.e., interviewer-classified) race is included in the analysis, previous findings of significant self-identified racial differences in reported health screenings are rendered insignificant. For example, there

are significant differences in the proportion of women who report receiving health screenings between women who identify as black but are seen as white and women who are both seen as and identify as black, even after controlling for numerous background characteristics including previous health history and socioeconomic status. This intriguing variation is hidden in typical studies that use only a single measure of race.

Furthermore, I argue that the inconsistencies between multiple measures of race provide the analytical leverage necessary to adjudicate between existing causal claims and narrow the field of possible mechanisms that perpetuate racial disparities in health care. The finding that perceived race is more closely related to the receipt of health screenings than self-identification casts doubt on several common explanations for disparities in screenings that assume cultural differences between groups. Instead, it points to the importance of appearance – and perhaps the implicit prejudices that go along with it – in explaining who receives regular health screenings and who does not.

WHY DIFFERENT MEASURES SUGGEST DIFFERENT MECHANISMS

Recent work across the social sciences has shown that research conclusions about racial disparities are affected by which measure of race is used and how the racial data were collected (Arias, Schauman, Eschbach, Sorlie, & Backlund, 2008; Campbell & Troyer, 2007; Harris & Sim, 2002; Morgan, Botev, Chen, & Huang, 1999; Telles & Lim, 1998; Sugarman, Soderberg, Gordon, & Rivara, 1993; Hahn, Mulinare, & Teutsch, 1992). However, much of this work has focused on the quantitative differences between coefficient estimates, population counts or vital rates. There has been little consideration of whether different measures of race also suggest substantively different explanations for the observed disparities. Take, for example, someone who is perceived to be white by a hospital nurse but would have identified as nonwhite if given the option. Might that individual be treated differently than someone who both identifies and is seen as nonwhite? This question motivates this study of racial disparities in health screenings and the approach I advocate for studying racial disparities in general.

Ethnomethodologists study what happens when social norms break down to understand the assumptions that allow human interactions to typically

function seamlessly (Slattery, 2003, pp. 104–106). Similarly, inconsistencies between the perception of an individual's race and his or her self-identification might provide clues to how race functions as a marker of difference in the American society. These clues could help researchers to identify the mechanisms that perpetuate racial inequalities in life chances, including disparities in health outcomes and the receipt of health care. When researchers use only one measure of race, many characteristics that may signal an individual's "race" become conflated: known ancestry, skin tone, hair type and facial features, cultural traditions, sense of shared history, etc. (Mays, Ponce, Washington, & Cochran, 2003; LaVeist, 1994; Yee, Fairchild, Weizmann, & Wyatt, 1993). By using multiple measures of race, each of which captures a different dimension of what race means in America, researchers can begin to untangle which specific aspects of "race" seem to be the most salient in a given situation, such as a medical visit, or for a given outcome, such as hypertension.

This study is certainly not the first to demonstrate that there are important "intra-racial" distinctions that may better describe – and possibly help explain – differences in life chances for individuals in the United States. For example, an increasing number of scholars study the extent of skin tone stratification in health among African Americans (Klonoff & Landrine, 2000; Krieger, Sidney, & Coakley, 1998; Sweet, Dade, Kiefe, & Liu, 2007), or national origin differences in health among Latino and Asian Americans (Gee, Spencer, Chen, & Takeuchi, 2007; Weinick, Jacobs, Stone, Ortega, & Burstin, 2004). However, my approach differs in one important aspect: I argue researchers should not take for granted the boundaries and definitions of these conventional racial categories. If race is a "social construction," with categories and hierarchies that vary over time and across contexts, then we should not assume that one measure or dimension of race always trumps, or modifies, the other. Each piece of information may be equally relevant and, most importantly, is equally "correct." Someone who is perceived by others to be white but identifies as black (or Asian or American Indian) has not been "misclassified" as white, nor is he or she "really" a light-skinned black person (cf. Campbell & Troyer, 2007). It is true that individuals likely have more knowledge of their ancestry than can be gleaned simply by looking at them. But the question is not who knows the "truth," but what information do we need to understand whether and how race is operating as a marker of difference in a given situation?

I argue that survey researchers studying racial disparities need, at minimum, a measure of how an individual is perceived by others and at least one measure of the individual's self-identification. These two measures

capture the tension between other-ascription and self-definition that runs throughout scholarship on race and ethnicity in the social sciences, as well as the debates between discrimination and “cultural” behaviors that dominate public discourse on race in the United States. Certainly, how people are seen, or treated, affects how they see themselves, or how they behave (and vice versa), and this likely explains why different measures of race are congruent for the vast majority of Americans (Harris & Sim, 2002; Nagel, 1994). But the recursive relationship between ascription and identification, or appearance and attitude, makes the cases of inconsistency between measures of race all the more interesting; they become windows into how racial disparities emerge and persist.

In the analyses that follow, I apply this approach to the case of receiving recommended health screenings such as clinical breast exams, blood pressure checks and Papanicolaou tests (pap smears). It is particularly important to include multiple measures of race in a study of racial disparities in health screenings because being screened requires an in-person interaction with a health care professional, opening up the possibility that the way an individual is perceived racially could affect the quality or type of care they receive, in addition to (or instead of) the ancestry, beliefs or behaviors that may be captured by one’s self-identification. The implications for eliminating health disparities in each case are very different, yet most studies conflate them by using a single measure of race.

THE CASE OF HEALTH SCREENINGS

Racial differences in health screenings present an intriguing empirical puzzle for scholars of race and health. Previous studies have found that blacks are equally if not more likely than whites to report receiving most preventative health screenings. This finding is, of course, counter-intuitive: African Americans are often the most disadvantaged racial group in the United States when it comes to both access to health care and rates of morbidity and mortality (Keppel, 2007; Smedley, Stith, & Nelson, 2002). However, the peculiar black advantage in reported health screenings remains statistically significant even after including relevant controls such as previous health history, insurance status and urban residence; it also has been documented across several different health surveys and dates from at least 1985 to the present (Hiatt, Klabunde, Breen, Swan, & Ballard-Barbash, 2002; Hewitt, Devesa, & Breen, 2002; Wilcox & Mosher, 1993; Mosher & Aral, 1991; Makuc, Freid, & Kleinman, 1989).

Although one might consider finding a black advantage in health screenings cause for celebration, health researchers have been duly skeptical about the result – particularly as it does not square easily with other findings that blacks tend to be diagnosed with various conditions at more advanced stages than whites (e.g., [McCarthy et al., 1998](#)) and is contradicted by finding racial disparities in the expected direction (i.e., blacks are less likely to receive regular screenings than whites) when the screening data are drawn from medical or insurance records instead using self-reports of screening from a survey ([Fiscella, Holt, Meldrum, & Franks, 2006](#); [McPhee et al., 2002](#); [Gordon, Hiatt, & Lampert, 1993](#)). The generally accepted explanation to account for these findings is that self-reported screenings overestimate either the actual number or the frequency of screenings for blacks compared to whites ([McGovern, Lurie, Margolis, & Slater, 1998](#)). There are two hypothesized mechanisms for the apparent overestimate: either blacks are more susceptible to social desirability bias than whites or they have larger recall biases than whites, or both ([Warnecke et al., 1997](#); [Zapka et al., 1996](#)). These common explanations assume that there are racial or “cultural” differences in responding to survey questions. That is, black women overreport being screened because they, more so than whites, do not want to look bad in front of a survey interviewer or do not remember the dates of events as precisely.

Social Desirability and Recall Bias

Before offering an alternative perspective, I will first explain the logic behind the current claims. Social desirability bias occurs when a survey respondent provides an answer that he or she thinks is the socially appropriate response, even though it is not the “real” or “true” answer for that particular respondent ([Tourangeau, Rips, & Rasinski, 2000, p. 257](#)). Common examples include overreporting one’s physical activity or underreporting the use of controlled substances ([Warnecke et al., 1997](#)). In order for social desirability bias to explain racial differences in reported health screenings, there must also be racial differences in who exhibits social desirability bias. Blacks are thought to be more susceptible to social desirability bias when interviewed by whites, who comprise the majority of interviewers for large national surveys, about their racial attitudes ([Krysan & Couper, 2003](#)). By extension to health screenings, some black respondents may report being screened, even though they were not, because they do not want to look bad

in front of a white interviewer. However, the evidence for social desirability bias among black respondents when answering questions about their health or health care outcomes is mixed (McHorney & Fleishman, 2006; Gove & Geerken, 1977).

Recall bias is also a common problem in survey research (Tourangeau et al., 2000). The type I refer to here occurs when the survey question includes a specific time frame, such as “In the last year, did you...” In general, people tend to be more accurate in recalling events that happened more recently. But when answering questions about events that occur frequently or routinely, such as health screenings, survey respondents may rely on “schemas.” That is, their answers may be based on a generalization of what usually occurs, rather than the details of a specific event (Warnecke et al., 1997). This results in respondents under- or overestimating the amount of time that has passed since their last screening, a process known as “telescoping.” Again, however, racial differences in reported screenings could only be explained by racial differences in recall bias. Proponents of this explanation suggest that there are racial, or rather “cultural,” differences in the perception or importance of time (Vernon, Briss, Tiro, & Warnecke, 2004; Zapka et al., 1996). So while all respondents may telescope their reporting of health screenings, some suggest that black respondents do so to a greater extent than other groups (McPhee et al., 2002).

In challenging these explanations for racial disparities in reported health screenings, I am not challenging the existence of social desirability or recall biases among survey respondents generally. What I question is the mechanism that creates racial differences in these commonly accepted biases (and whether the differences are best described as “racial” in the first place). The current explanations – that racial differences in social desirability biases stem from “black” respondents not wanting to look bad in front of “white” interviewers, or racial differences in recall bias stem from cultural differences in accounting for time – were developed to explain results based on only racial self-identification. If the explanations are correct, then, when multiple measures of race are included, I would expect to find that the likelihood of reporting health screenings is more closely related to one’s self-identification than how one is perceived by others. In fact, as noted earlier, I find just the opposite. This result both demonstrates the utility of using multiple measures of race to study racial differences in health care and suggests that researchers should seek elsewhere for the causal mechanisms that explain the curious relationship between race and health screenings in the United States.

DATA AND METHODS

The NSFG is a cross-sectional study of family formation and maternal and child health outcomes in the United States that has been conducted six times – at varying intervals of three to eight years – between 1973 and 2002. Before the 2002 cycle, it was a nationally representative, in-person survey of women, ages 15–44, living in households. (The 2002 cycle added interviews with men.)

In addition to detailed data on contraceptive knowledge and use, prenatal care and pregnancy outcomes, the NSFG also gathers information on various background characteristics on the respondent and her cohabiting partner or husband (if one is present). During the first four cycles of the survey (1973, 1976, 1982 and 1988), the NSFG also included the interviewer’s classification of the respondent’s race. Interviewers were instructed to code this information before the respondent answered background questions relating to their race, national origin, religion, current employment status or income, but following all of the health-related questions about contraceptive use and medical or pregnancy history.

Although both the self-reported and interviewer-classified measures of race are available in the NSFG’s public-use datasets, the interviewer-classified measure appears to have been used only internally by the NSFG – to replace missing data on the self-reported race questions in a recoded composite variable “RACE” (which was then used in calculating post-stratification weights). An electronic search of academic journals, using both JSTOR and the Social Science Citation Index, did not turn up a single article that specifically mentions using the interviewer-classified measure of race, either alone or in combination with the self-reported measure, in any of the published studies that use NSFG data from this period. In fact, authors do not mention that there is more than one measure available in the survey or specify which of two they are using in their analyses.

Here, I make use of only the 1988 data because it contains the most information on health screenings (described in detail later), as well as the two measures of race. The full sample in 1988 includes records on 8,450 women. Of these, 171 cases had missing data on either or both of the measures of race. To preserve health screening information on as much of the sample as possible, I handle this missing data, as well as missing data on insurance status and family income, by including an indicator variable for having a missing value and recoding the missing data for the control variable to either zero or the modal category as necessary. However, the results remain similar if these cases are removed from the analysis entirely.

Measures of "Race"

Interviewers were instructed to code the respondents' race using three categories: "White," "Black" and "Other." They were given no specific criteria on which to make their decision (i.e., skin tone, facial features, hair type, etc.), only broad descriptions of the categories based on the definitions recommended by the *Office of Management and Budget (1977)* and employed by the U.S. Census Bureau at the time. These included a typical instruction that the various Hispanic origins (e.g., "Puerto Ricans," "Cubans" and "Chicanos") are considered ethnicities and not races and, therefore, should not be counted in the "Other" category (with Asians and American Indians), but should be recorded as either "White" or "Black."

Several questions later, respondents were shown a card with four categories and asked, "Which of these groups best describe your racial background?" The answer options were: American Indian, Asian or Pacific Islander, Black and White. Respondents were allowed multiple mentions and could name all four categories if they wished. I retained the multiple mentions in my analyses below. However, I aggregated American Indians and Asian or Pacific Islanders into one self-reported "Other" category to match the three-category coding available to the interviewers.

The NSFG oversampled black women to allow for meaningful statistical comparisons between blacks and whites. Thus, self-identified black women make up approximately one-third of my study sample though, according to census data from the period, just 12 percent of all Americans were reported to be black. Nevertheless, I do not use post-stratification weights to reapportion the sample. My goal is not to provide nationally representative estimates of who gets screened but to explore the possible mechanisms that perpetuate health disparities, thus the weights are unnecessary in my descriptive statistics. Furthermore, in my multivariate analyses, the weights are more of a hindrance, in terms of understating the power of the data to distinguish differences between "blacks" and "whites." (Also, introducing multiple measures of race begs the question of just who or what was oversampled in the first place: women who looked black, women who identified as black or neighborhoods with large proportions of self-identified blacks?)

Table 1 shows the cross-tabulation of self-reported and perceived (interviewer-classified) race. There are several points to note about the data. First, the rows and columns do not sum to the sample size because the respondents were allowed more than one response for their

Table 1. Cross-Tabulation of Perceived and Self-Identified Race.

Self-Identified Race	Perceived Race			Row total
	Black	White	Other	
Black	2711	42	8	2761
White	44	5227	34	5305
Other	82	166	166	414
Column total	2837	5435	208	

Source: 1988 NSFG.

Note: Unweighted counts. Self-identified “Other” combines American Indian and Asian or Pacific Islander race responses. Hispanic origin was coded separately by NSFG and is included only as a control in the analyses below. Row and column totals do not sum to sample size of 8,450 because respondents could identify with more than one race. Also cases that are missing data on one or more measures of race are not shown ($N = 171$).

self-identification. Interestingly, the percentage of women who offered more than one racial background (2.3 percent) is similar to the percentage of the U.S. population that was recorded as multiracial in Census 2000 (Jones & Smith, 2001). A similar proportion of women were perceived by the survey interviewer to be a different race than the one they selected for themselves. It is these “inconsistent” cases, in the off-diagonal cells of Table 1, that offer the analytical leverage necessary to move toward explaining racial disparities instead of simply describing them.

The fact that only about 2 percent of respondents have inconsistent racial classifications is to be expected given commonsense notions of race in the United States and the reciprocal relationship, noted earlier, between one’s appearance and one’s identity. However, the number of inconsistencies should not be taken to indicate they are unimportant or that it is unnecessary to take them into account when studying racial disparities. In previous work, I have shown that racial classification inconsistencies such as these cannot be attributed to random “errors” (Saperstein, 2006) and that racial variation in the United States is best described using both measures of race (rather than just one). Thus, researchers lose information by assuming that measures of racial appearance and self-identification are essentially the same (Saperstein, 2008). Instead, I argue that comparing women across both measures of race can help to narrow down the mechanisms that create racial disparities in health screenings by answering the question: Are reported differences in screening more closely related to how these women look or how they identify?

Analytic Strategy

I use the research design of [Wilcox and Mosher \(1993\)](#) as a model for my analyses to ensure that any discrepant findings are the result of including an additional measure of race and not some other factor. Wilcox and Mosher also draw from the 1988 NSFG data to study “Factors Associated with Obtaining Health Screening Among Women of Reproductive Age” (the title of their paper). They find the usual but counter-intuitive relationship between patient’s race and the receipt of health screenings: non-Hispanic black women are more likely to report receiving pap smears, breast exams and blood pressure checks in the past year than non-Hispanic white women. To reach this result, they use only the self-reported measure of race as a covariate in their analyses.

By combining perceived and self-reported measures of race, I do not expect to find significantly different estimates of the gap between “whites” and “blacks” in the likelihood of receiving a given screening (nor do I). The number of inconsistently classified cases is too small to radically change estimates for the consistently classified groups, relative to their standard single-measure counterparts. However, I do expect my multiple-measure approach to provide insight into how a patient’s race operates to create disparate outcomes in health screenings. The aim is not to correct conventional findings, but to elaborate upon them.

Reported Health Screenings

As part of the respondent’s medical history, the 1988 NSFG includes a series of questions about whether and under what circumstances the respondent received any of several health screenings. Each test or exam was covered in a pair of questions. The first read: “In the past 12 months, during a visit for family planning services, did you have a pap smear?” This question was followed by: “Did you have a pap smear as part of a general check-up or other medical visit in the past 12 months?” The possible responses to each were simply “yes” or “no.” The two questions regarding pap smears were followed by identically worded pairs of questions regarding whether the respondent had a pelvic exam, a breast exam, a blood pressure test and a urine test. Following [Wilcox and Mosher \(1993\)](#), I analyze the likelihood of having a pap smear, a breast exam and a blood pressure test. Also, I do not distinguish between where the exam was conducted, only if it was or not.

Among NSFG respondents, there was no clear “trend” in the number of exams the women received. The most common outcome for all women was receiving all three exams, followed by receiving none of them. The third most common outcome was receiving just one exam, and it was most often a blood pressure check-up. The proportion of all women who reported having been screened in the past year was relatively high for each exam, ranging between 76 and 86 percent. However, there are striking differences for subgroups, such as women with low levels of education, low income or who are not sexually active (Wilcox & Mosher, 1993). These differences underscore the importance of not only comparing the proportions being screened in each racial group but estimating whether racial disparities in screening might be the result of any of these other factors using multivariate analysis.

Control Variables

After comparing racial disparities in the reported frequencies of screening, I estimate a series of logistic regressions predicting the likelihood of having each test, net of other characteristics known to affect receipt of health care in general and these screenings specifically. These controls include self-reported Hispanic origin, age, marital status, education, family income, metropolitan residence, insurance coverage, number of family planning visits in the past year, current pregnancy status, history of pelvic inflammatory disease, history of hypertension, whether the woman was abstinent in the past year and whether she was currently taking oral contraceptives. The coefficients in these models represent the log odds of having had the given test, all other factors being equal. A positive coefficient means women with the given characteristic are more likely to have had the screening within the past year. A negative coefficient means they are less likely to have had the screening.

There are some limitations to using the 1988 NSFG for studying the correlates of obtaining preventative health care, which are detailed by Wilcox and Mosher (1993). The most important is that respondents were not asked whether they sought any medical care in the past 12 months, only whether they sought services for the purpose of family planning. So, using the number of family planning visits as a proxy for use of health care underestimates the number of women who had a medical visit of any kind. Similarly, information on whether the respondent had health insurance was gathered in the context of how they paid for their most recent family planning visit.

Thus, respondents who never sought family planning services are missing this information. As noted earlier, I ran models with and without an indicator for whether the respondent's insurance status was missing, and the estimated racial disparities remain substantively the same. Given that and the fact that [Wilcox and Mosher's \(1993\)](#) findings regarding racial disparities in these screenings are consistent with studies that use different surveys, I do not expect the limitations of the NSFG to significantly bias the effects of perceived and self-reported race.

Also, it is important to note that the NSFG does not make individual-level information about its survey interviewers publicly available, so I cannot assess directly whether or not characteristics of the interviewer are related to the respondents' racial classification and self-identification. Previous studies do find race of interviewer effects in the perception of skin tone ([Hill, 2002](#)) and the reporting of political attitudes ([Krysan & Couper, 2003](#)), but studies like this one that examine both perceived and self-identified race do not find that interviewer characteristics bias the results ([Penner & Saperstein, 2008](#); [Campbell & Troyer, 2007](#)). Thus, I assume that the racial classifications of NSFG interviewers are good proxies for the perceptions of health care personnel.

WHICH BLACK WOMEN ARE MORE LIKELY TO BE SCREENED?

Typical studies of racial disparities in health care are interested in whether one racial group has substantively or measurably different outcomes than another. In the United States, this reference group is usually non-Hispanic whites. When using multiple measures of race, the focus of inquiry changes as each combination of perceived race and self-identification has more than one reference group (e.g., women who identify the same, but are perceived differently and women who are perceived the same, but identify differently). Thus my question is not whether "black" women have higher rates of screenings than "white" women, but *which* "black" women report higher rates of screening: women who are seen as black, women who identify as black or both?

Descriptive Statistics

Table 2 presents the percentage of women who reported being screened in the past year for the seven largest combinations of perceived and

Table 2. Descriptive Statistics, by Perceived and Self-Identified Race, Ages 18–44.

	Seen as White				Seen as Black			Seen as Other
	Identifies as white only		Identifies as other only		Identifies as multiracial		Identifies as black only	
	69	67	56 ^w	82	78	55		
Had a pap smear in past 12 months (%)	71	70	63	80	77	58		
Had a breast exam (%)	83	85	78	92	86	72		
Had blood pressure checked (%)	52	44	51	55	47	40		
Has some health insurance (%)	2	5	10	11	18	3		
Covered by Medicaid (%)	15	14	20	11	12	41		
Insurance coverage missing (%)	36	28	37	42	39	24		
Had one or more family planning visits (%)	11	23	17	22	20	7		
History of PID (%)	12	23	22	24	19	7		
History of hypertension (%)	5	2	5	9	4	5		
Currently pregnant (%)	19	18	17	23	21	11		
Currently using the pill (%)	6	4	2	5	6	5		
Abstinent for past 12 months (%)	7	3	37	6	3	5		
Hispanic (%)	41	39	44	48	46	45		
Age 18–29 (%)	59	61	56	52	54	55		
Age 30–44 (%)	13	26	22	14	24	11		
Did not graduate from HS (%)	\$35,279	\$31,570	\$34,549	\$21,110	\$22,171	\$32,968		
Average family income	17	14	17	58	51	27		
Lives in central city (%)	57	51	66	29	33	57		
Lives in suburbs (%)	4397	93	41	66	2183	132		
N (unweighted)								

Source: 1988 NSFG.

For explanation of data on insurance status, refer to text.

^bObserved frequency differs significantly from consistently classified blacks ($p < .05$, one-tailed test).

^wObserved frequency differs significantly from consistently classified whites ($p < .05$, one-tailed test).

self-identified race. Also included are means and percentages for other key characteristics such as insurance status, health history and family income. From these descriptive statistics, it is clear that women who are seen as black are more likely to receive pap smears, breast exams and blood pressure checks than women who are seen as either white or other (Table 2). That is, the differences in reported screenings are smaller within perceived race groups than between them. For example, the differences among women who are seen as black (columns 5 and 6) are on the order of 3–6 percent compared to differences as large as 20 percent when comparing them to the rest of the sample.

Another way to highlight the relative salience of perceived and self-identified race is to compare the women who identify as black but are seen as white (column 4) to their two potential reference groups (columns 1 and 6). With 65 percent reporting pap tests, 57 percent reporting breast exams and 73 percent reporting blood pressure checks, women who are identified as black but are seen as white are among the least likely to receive any of the health screenings. These percentages are all significantly lower than those for women who are both seen as and identified as black (78, 77 and 86 percent, respectively), suggesting again that previous findings of a “black” advantage in screening are better described as applying only to women who are seen as black. Interestingly, women who identify as black but are seen as white are also less likely to report being screened than women who are both seen as and identify as white (69, 71 and 83 percent, respectively).

Overall, these findings support my argument that multiple measures of race can provide unique and useful information in studies of racial disparities. The simple picture one gets from previous studies that “blacks” are more likely to report being screened than “whites” or “others” is complicated here by: (1) the fact that the overarching pattern is defined by perceived race, not self-identity; and (2) among women who are seen as white, women who identify as being nonwhite have significantly lower rates of being screened.

Multivariate Analyses

I first estimated a model that included only indicators for the various racial categories to get a baseline coefficient before controlling for any other factors that might be related to an individual’s race, the outcome of interest or both. I then identified related sets of controls – such as those for insurance status, those that measure health history or use of health services,

those that represent general determinants of health care access (e.g., income) and other compositional characteristics (e.g., age) – and added each set one by one, observing changes to the coefficients for the racial categories. The relationship between health screenings and the various controls follows typical patterns, with rural residents and people with low income or less than a high school education less likely to receive regular screenings (cf. Wilcox & Mosher, 1993).

However, adding these standard covariates does not significantly alter the pattern of racial disparities shown in Table 2. Thus, I only present estimates of racial differences in screening from the “full” models with all control variables included. Table 3 provides the log odds of having the screening named in the column for the racial categories named in the row. For each

Table 3. Logistic Regressions Predicting Reported Health Screenings, by Race, Ages 18–44.

	Pap Test		Breast Exam		BP Check	
	Self-reported race only	Both race measures	Self-reported race only	Both race measures	Self-reported race only	Both race measures
Self-identification						
Identifies as white	-.493** (.072)	.045 (.248)	-.392** (.071)	.212 (.247)	-.295** (.084)	.297 (.290)
Identifies as other	-.986** (.169)	-.555 [†] (.294)	-.738** (.166)	-.114 (.293)	-.728** (.181)	-.005 (.342)
Perceived race						
Seen as white		-.564* (.249)		-.632** (.248)		-.620* (.291)
Seen as other		-.462 (.299)		-.720** (.297)		-.848* (.346)
Constant	-.185 (.285)	-.181 (.286)	-.115 (.281)	-.110 (.281)	1.105** (.347)	1.109** (.347)
Observations	7718	7718	7718	7718	7704	7704

Source: 1988 NSFG.

Notes: Standard errors in parentheses. All models include controls for: identifying as Hispanic, identifying multiple races, age, education, family income, metropolitan residence, marital status, insurance status, whether on the pill, currently pregnant, seen a doctor for family planning purposes in past year and missing data. Pap test models also control for history of pelvic inflammatory disease and whether abstinent in the past year. Blood pressure (BP) check models also control for history of hypertension.

[†] $p < .10$; * $p < .05$; ** $p < .01$.

screening, I compare two models: the first includes only the respondents' racial self-identification, and the second includes both self-identification and how the respondent was perceived by the survey interviewer. The reference groups in these models are self-identified black women and consistently classified black women, respectively.

The findings are similar across all three health screenings and echo the patterns observed in [Table 2](#): perceived race is a better descriptor of differences in reported screening than self-identification. Although the effects of self-identification are significant and in the expected direction in the initial models (as previous studies have shown), once perceived race is added, the effects of self-identified race are no longer statistically significant at conventional levels. Likelihood ratio tests comparing chi-square values between the models with both race measures and the models with only self-identification confirm that the former provide a better fit to the data (results not shown). I also tested interaction effects between the various measures of race, but none represented an improvement over the purely additive models shown in [Table 3](#). Some caution is necessary in interpreting these results because of the high degree of collinearity between self-reported and perceived race. However, the magnitude and direction of the effects are similar when using alternative model specifications such as when looking at the effect of identifying as white among black women or identifying as nonwhite among white women (results not shown).

DISCUSSION

The clear message from both the observed frequencies in [Table 2](#) and the multivariate analyses in [Table 3](#) is that the peculiar “black” advantage in preventative health screenings is better attributed to being perceived as black than self-identifying as black. This distinction may sound inconsequential, semantic even, but the magnitude of the effects is far from trivial – even if the proportion of women affected may be relatively small. For example, in multivariate analyses among self-identified black women (not shown), being seen as white is the third largest predictor of rates of pap testing ($\beta = -.734$), behind the positive effects of seeking medical assistance with family planning ($\beta = 1.879$) and whether the woman was using oral contraception ($\beta = .742$). In similar breast exam and blood pressure models, being seen as white is the second largest and most significant predictor behind only whether the woman went to at least one family planning visit.

I conducted one further test to confirm that reporting high rates of screening was associated with being seen as black rather than self-identifying as black. I also compared rates of screening between women who are seen as black but identified as white and their two potential reference populations: women who are seen as black (and identified as black) and women who are identified as white (and are seen as white). If perceived race is a better predictor of receiving health screenings, as the previous analyses suggest, then we would expect the women who are seen as black but identified as white to report being screened more often than other women who self-identify as white. Table 4 shows the percentages of women reporting a health screening in the past year for these alternate comparisons. The number of women, age 18–44, who are seen as black but identified as white is quite small ($N = 17$), which works against finding statistically significant differences between groups; nevertheless the percentage of these women who reported receiving a pap smear in the past year is significantly higher than the same percentage among women who self-identify as white ($p < .05$, one-tailed test). Indeed, the percentages for all three screenings are in the expected direction, with women who are seen as black but identified as white receiving more screenings than women who are identified as white and are also seen as white. The differences in rates of screening remain in the expected direction in multivariate models, as well (not shown).

These findings and the previous analyses cast doubt on the recall and social desirability bias explanations noted earlier, which claim to account for the otherwise counter-intuitive finding that “black” women are screened more often than “white” women. Although the NSFG does not include measures of the respondents’ tendency to give socially desirable answers (so I cannot

Table 4. Percent Reporting Health Screenings for Women Seen as Black and Women Who Self-Identify as White, Ages 18–44.

	Seen as Black	Seen as Black, Identifies as White Only	Identifies as White
Pap smear in last 12 months	78%	88% ^w	69%
Breast exam in last 12 months	77%	82%	71%
Blood pressure checked	87%	94%	83%
<i>N</i>	2259	17	3530

Source: 1988 NSFG.

^wThe observed frequency differs significantly from women who identify as white ($p < .05$, one-tailed test).

test the claims directly), both my approach and my results beg the question of how racial differences in these biases are realized. For example, as noted earlier, some scholars suggest that recall biases are the result of cultural differences in the importance of time (Vernon et al., 2004; Zapka et al., 1996). If one's racial or ethnic identity is a proxy for one's "culture," as in this explanation, then women who are seen as white but identified as black should be subject to the same recall biases as their self-identified black counterparts who are also seen as black. The fact that they report significantly lower rates of screening suggests that they are not subject to the same recall biases. Similarly, women who self-identify as black but are seen as white do not appear to be more susceptible to social desirability bias. Thus, it may be more fruitful to explore systemic causes, such as how claims are coded and processed in different health care settings, to better explain the different estimates of the racial disparity in health screening between self-reports and medical records (cf. Fiscella et al., 2006). Recent research has also raised the possibility that, if the reports of screening are accurate, then the finding that "black" women are more likely to be screened but also have higher morbidity and mortality rates suggests that health care professionals should now turn their focus toward improving the frequency and quality of follow-up care (Crawford, Jones, & Richardson, 2008).

At the same time, knowing that the association between race and reported health screenings is stronger for looking black than identifying as black should lead researchers to examine mechanisms related to interactions between patients and health care personnel rather than the usual focus on patient attitudes or health behaviors. Doctors and nurses are not immune from racial prejudice and have been shown to hold stereotypical expectations about the behavior of black patients (Van Ryn & Burke, 2000). These often implicit prejudices may help explain racial differences in recommended treatments and the quality of care black patients receive (Van Ryn, Burgess, Malat, & Griffin, 2006; Oliver, Goodwin, Gotler, Gregory, & Stange, 2001; Hannan et al., 1999; Ayanian, Weismann, Chasan-Taber, & Epstein, 1999).

Of course, studies of racial differences in quality of care either find no significant differences between black and white patients or find that doctors offer lesser treatment options and spend less time, on average, with black patients. In the case of screenings, health care personnel appear to be unexpectedly diligent with patients they perceive as black. Without more information on the context of these clinical encounters, I can only speculate as to why that might be. The higher rates of screening could be a result of the less personalized service documented in previous studies, with health care personnel simply giving the full battery of recommended screenings to

black patients without discussion of their individual case. Similarly, given the well-documented association between blacks and poorer health outcomes, doctors and nurses may be relying on a heuristic that equates race with risk. If true, this implies not only that black patients are receiving less personalized care but also that white patients who are at risk are likely being under-screened (cf. Wilcox & Mosher, 1993).

Lastly, neither my results nor my discussion of them should be taken to suggest that perceived race is the more “correct” measure of race for research to use in studies of health screenings. By using perceived race and self-reported race in tandem, I show that there are more similarities in screening patterns within perceived race groups than within self-reported race groups. However, this could be explained by the increased salience of perceived race during the in-person encounter with a health care professional. Other health outcomes might follow different patterns depending on the mechanisms that create racial disparities. Indeed, preliminary analysis of racial differences in several reported health conditions shows notable variation in which dimension of racial difference remains significant after controlling for the other (Table 5). Differences in perceived race are more closely related to disparities in high blood pressure, whereas differences in self-identification map more clearly onto differences in having sickle cell anemia or a history of pelvic inflammatory disease (PID), and both measures of race matter for predicting diabetes. This further supports my argument that one measure of race cannot replace the other; researchers need both measures to begin to tease out the causes of racial disparities in health and health care.

CONCLUSION

This study has shown that racial disparities in reported health screenings are more closely related to how a woman is perceived racially than how she self-identifies. The findings call into question current explanations for disparities in reported screenings, which rely on racial self-identification as a proxy for cultural differences. Instead, I argue that the results are more consistent with recent attention to the role of discrimination and implicit prejudice in clinical encounters. Future research should further examine the racial stereotypes that health care professionals hold that might affect patient care, in particular the extent to which race is equated with a patient’s perceived risk of disease.

It is also important to replicate this study on other survey samples and with other health outcomes – particularly because of the small number

Table 5. Logistic Regressions Predicting Health Conditions, by Race.

	Hypertension	Diabetes	PID	Sickle Cell
<i>Self-identification</i>				
Identifies as white	.240 (.298)	-1.197** (.452)	-.640* (.273)	-2.611** (.777)
Identifies as other	.623 [†] (.363)	.062 (.549)	-.829* (.358)	-2.429 [†] (1.270)
<i>Perceived race</i>				
Seen as white	-.696* (.297)	1.155* (.453)	.125 (.274)	.055 (.735)
Seen as other	-1.453** (.412)	.506 (.604)	.035 (.366)	-1.076 (1.013)
Constant	-1.712** (.403)	-3.416** (.537)	-1.154** (.301)	-3.936** (.140)
Observations	7290	8401	8434	8382

Source: 1988 NSFG.

Notes: Standard errors in parentheses. Constant refers to consistently classified black women. Sickle cell model includes controls for identifying as Hispanic, identifying as multiracial and being born outside of the United States. All other models include controls for: identifying as Hispanic, identifying multiple races, age, education, family income, metropolitan residence, marital status, insurance status, whether on the pill, currently pregnant or seen a doctor for family planning purposes in past year. Hypertension model also controls for hours worked. PID model controls for whether abstinent in the past year.

[†] $p < .10$; * $p < .05$; ** $p < .01$.

people with inconsistent classifications. Most of the currently available surveys that include multiple measures of race were designed to study health outcomes and behavior, so there is much work that can be done with existing data to advance our understanding of the relationship between race and health along the lines outlined here. (These include the National Longitudinal Study of Adolescent Health and the Behavioral Risk Factor Surveillance System.) However, a committed effort by survey researchers to collect multiple measures of race in all surveys is long overdue. Beyond simply improving academic studies of race and health disparities in the United States, knowing when (and why) certain health outcomes are more closely associated with racial perceptions, racial identities or racial ancestry would go a long way toward improving both policy interventions and the recommended treatments for conditions often associated with members of a given race.

ACKNOWLEDGMENTS

Many thanks go to Michael Hout, Claude Fischer, Michael Omi, Sandra Smith and Amani Nuru-Jeter for their helpful comments and suggestions.

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HOW DO AMERICAN BLACK, WHITE, HISPANIC, AND ASIAN HEALTH CARE USERS PERCEIVE THEIR MEDICAL NON-ADHERENCE?

Irena Stepanikova and Karen S. Cook

ABSTRACT

This study investigates racial and ethnic patterns in perceived non-adherence among American White, Black, Hispanic, and Asian health care users, using data from a national sample of recent health care users (N = 5,124). We estimated multivariate logistic regression models of perceived non-adherence for all respondents and by respondents' race/ethnicity. The results revealed that Blacks and Hispanics respectively had 39 percent and 36 percent lower odds of perceived non-adherence compared to Whites, but the odds of perceived non-adherence were 91 percent higher among Blacks who reported having experienced racial/ethnic bias in health care when compared to other Blacks. Good

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 47-66
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027005**

physician–patient communication was associated with a 63 percent lower odds of perceived non-adherence among Whites and Hispanics. The results suggest that compared to Whites, Blacks and Hispanics are less, not more, likely to report perceived non-adherence.

Compliance with medical treatment regimens is one of the factors associated with better health and more rapid recovery from illness or other medical problems. Understanding how patients of different racial and ethnic backgrounds perceive their adherence to medical treatment may provide important clues regarding the factors that affect compliance. This topic is significant since some minority groups, especially Blacks and Hispanics, have been portrayed in the medical literature as less adherent to treatment for various health conditions, including hypertension (Lowry, Dudley, Oddone, & Bosworth, 2005; Monane et al., 1996), diabetes (Heisler et al., 2007), high cholesterol (Kaplan, Bhalodkar, Brown, White, & Brown, 2004; Mann, Allegrante, Natarajan, Halm, & Charlson, 2007), bipolar disorder (Johnson et al., 2007), asthma (Williams et al., 2007), and post-renal transplantation therapy (Didlake, Dreyfus, Kerman, Van Buren, & Kahan, 1988; Kiley, Lam, & Pollak, 1993; Rovelli et al., 1989). In addition, minority patients are reported to decline angiography and to miss angiography appointments more frequently (Gordon, Paterniti, & Wray, 2004), to defer therapy for chronic hepatitis C virus infection (Khokhar & Lewis, 2007), skip hemodialysis treatments (Unruh, Evans, Fink, Powe, & Meyer, 2005), and leave hospitals against medical advice (Franks, Meldrum, & Fiscella, 2006; Ibrahim, Kwoh, & Krishnan, 2007). Importantly, lower medical adherence and compliance is often suggested as one of the reasons that members of minority populations experience poorer health care outcomes and generally suffer poorer health when compared to Whites.

Yet, we have little information concerning how minority patients subjectively perceive their medical adherence. Perceived adherence may or may not correspond with adherence measured by more objective methods such as reviewing medical charts, obtaining records of blood tests, or tracking whether patients fill their prescriptions. Patient perceptions may be more influenced by their own subjective interpretations of the process and outcomes of care, which are known to vary by race and ethnicity. Minority patients tend to perceive their health care more negatively compared to Whites. They rate their health care providers' performance and the overall quality of care they receive as poorer on various dimensions, including

communication (Shi, 1999), listening skills (Blendon, Aiken, & Corey, 1989), and information sharing (Cooper-Patrick et al., 1999).

Even more importantly, as many as 15 percent of Hispanics and 12 percent of Blacks report that they have experienced racial bias in health care (Lillie-Blanton, Brodie, Rowland, Altman, & McIntosh, 2000) and about a third of Blacks and Hispanics believe that racism is a “major problem” in the American health care system (Lillie-Blanton et al., 2000). Sociological scholarship suggests that such perceptions are not unfounded. Studies of the general population show that despite major improvements in race relations in recent decades, the prevalence of negative stereotypes about minority individuals, especially Blacks and Hispanics, is still high among American Whites. Sniderman and Piazza (1993), for instance, assert that among Whites, “rarely less than one in every five and sometimes as many as one out of every two agree with frankly negative characterizations of Blacks, particularly characterizations of Blacks as irresponsible and as failing to work hard and to make a genuine effort to deal with their problems on their own” (p. 12). Bobo (2001) reports that 50–60 percent of Whites rate Hispanics as prone to violence, preferring to live off of welfare, and less intelligent than Whites. He summarizes that while many American Whites personally reject negative racial stereotypes and their implications, stereotypes still control perceptions and behavior in many face-to-face interactions. One reason for the persistence of racism is that stereotypes operate to a large degree on a non-conscious level, defying conscious effort to act in a completely color-blind way (Devine, 1989).

Studies conducted in medical settings suggest that just as in everyday interactions outside the arena of hospitals and doctors’ offices, racial stereotypes affect medical encounters. Health care providers frequently hold negative stereotypes about minority patients. Stereotypes of non-compliance are especially common (van Ryn, Burgess, Malat, & Griffin, 2006). Patients who detect such negative stereotypes are vulnerable to a number of undesirable outcomes, including distrust of health care providers and the health care system more generally, which has been well documented (Boulware, Cooper, Ratner, LaVeist, & Powe, 2003; Doescher, Saver, Franks, & Fiscella, 2000; Stepanikova, Mollborn, Cook, Thom, & Kramer, 2006). Distrust, in turn, has the potential to exacerbate any adherence problems that existed in the first place. Such negative reactions to being stereotyped as non-adherent are especially likely if the victim of stereotyping perceives her own adherence as high.

Do studies reporting low adherence among minority patients feed racial stereotypes or reflect common biases in the literature? While such questions

naturally present themselves as we consider the possible sources of racial and ethnic stereotyping in health care settings, answering them is beyond the scope of this study. Instead, the research presented here seeks to contribute to our understanding of the complex processes that lead to disparities in health care by examining how American patients of different racial and ethnic backgrounds perceive their own adherence (rather than investigating the perceptions held by their health care providers). Our analysis relies on a national sample of health care users. The advantage of using a national sample is that it yields more representative results compared to most previous studies of adherence, which used small, non-representative samples, often consisting of patients with a specific health condition such as HIV patients (Bogart, Catz, Kelly, & Benotsch, 2001), diabetics (Lutfey & Ketcham, 2005), or organ transplant recipients (Greenstein & Siegal, 1998; Rovelli et al., 1989; Kiley et al., 1993; Morrissey, Flynn, & Lin, 2007). We identified only one study that used a representative sample of U.S. middle-aged and older adults (Heisler et al., 2007), but this study was limited to diabetic patients, making generalizations to other patient populations difficult. Our primary objective is to examine racial/ethnic differences in perceived non-adherence, but we also address the question of whether some portion of the differences between Whites' and minority patients' perceived adherence can be explained by racial/ethnic bias in health care, which is often disproportionately experienced by minority individuals.

Better understanding of patient perceptions of adherence is important not only theoretically since it can improve our understanding of racial dynamics in medical settings, but also it has important practical implications. If non-adherent patients perceive their adherence levels as relatively low, they may respond favorably to interventions by their health care providers to improve adherence. If, however, they misperceive their adherence as higher than it really is, additional educational programs helping them to assess their adherence levels more realistically are needed before interventions to improve compliance can be successful. In any case, improving adherence is a worthy goal, since a higher rate of adherence is linked to the increased effectiveness of treatment (Lee, Grace, & Taylor, 2006; Morrissey et al., 2007), lower morbidity and mortality (Callor et al., 2005; Bernardini, Nagy, & Piraino, 2000), a higher quality of life (Rosner, 2006), and, significantly, lower cost of care (Delea et al., 2007; LaFleur & Oderda, 2004). Efforts to increase medical adherence thus are especially important for minority patients since they generally have relatively high morbidity and mortality levels.

METHODS

Data Source

Data come from the 2001 Survey on Disparities in Quality of Health Care (The Commonwealth Fund, 2001), a random-digit-dial telephone survey with 6,722 adults (age 18 and older) residing in households in the continental United States. Telephone numbers from areas with higher than average densities of minority households were oversampled. Respondents answered questions about their sources of, access to, utilization of, and experiences with health care, their socio-demographic characteristics, and their health. The survey was conducted in English, Spanish, Mandarin, Cantonese, Vietnamese, and Korean.

Our analyses include Whites, Blacks, Hispanics, and Asians. We exclude members of other racial categories because their numbers were too small for meaningful statistical analysis. Questions about medical adherence were asked of respondents who had visited a doctor or clinic or had been admitted to a hospital in the past two years, resulting in a final non-missing sample of 5,124. We use weights and adjust for stratification by region and clustering within census tracts. Weights account for oversampling in high-density minority areas, the household characteristics of each region, and the number of eligible household members. They also adjust for demographic distortions due to non-response rates to make our estimates representative of the national population. This adjustment is important since the response rate in this survey was only 54 percent.

Measures

Perceived Non-Adherence

Respondents were asked, “Has there been a time in the last two years when you didn’t follow the doctor’s advice, or treatment plan, get a recommended test, or see a referred doctor?,” coded as 1 for those who responded “yes, there has been a time,” and 0 for those who selected “no, there has not been such a time.” This measure is broad enough to apply across health conditions and types of care in a general population of health care users studied here but is limited in precision since it does not distinguish between different behavioral forms of non-adherence, such as seeing a referred doctor and following the treatment plan.

Reasons for Perceived Non-Adherence

Respondents who reported that there has been a time in the past two years when they did not follow the doctor's advice, treatment plan, get a recommended test, or see a referred doctor were further asked why that was. The list of reasons included, "You didn't understand what you were supposed to do," "You disagreed with what the doctor wanted to do," "It cost too much," "It was too difficult to do," and "Doctor's advice went against your personal beliefs." Respondents could select as many reasons as they wished.

Race/Ethnicity

Respondents were first asked whether they were "Latino/a or Hispanic." Those who did not self-identify as Latino/a or Hispanic were asked whether they were "White," "Black/African American," or "Asian." Response categories also included "Native Hawaiian or other Pacific Islander," "American Indian or Alaskan Native," and "some other background," but respondents in these categories were excluded from the analysis because of their small numbers.

Control Variables

To select control variables, we used Andersen and Aday's conceptual framework for the study of access and use of care (Andersen & Aday, 1978; Andersen, 1995). This framework distinguishes between predisposing, enabling, and need-based factors in health care access and utilization and was found useful for explaining a variety of aspects of care, including patient experiences (Shi, 1999, 2000). Predisposing factors in our models include age in years (range 18–97), years of education (range 6–19), and gender. Enabling factors include living in a household with below-poverty income according to the U.S. Census Bureau, insurance type categorized as private insurance, public insurance (Medicaid, Medicare, and other public insurance, including CHAMPUS, TRICAP, or VA), or uninsured, U.S. nativity, language of the interview (English; other), and geographical region (midwest; northeast; south; west). Need factors are represented by subjective health status reported on a five-point scale ranging from "poor" to "excellent" (treated as continuous). Controlling for health is especially important since persons who are in better health tend to have fewer opportunities for non-adherence compared to people in poorer health.

We also control for the characteristics of health care that may affect patient experiences. Usual place of care was categorized as doctor's office, private clinic, or hospital outpatient department; community health center

or public clinic; and emergency room or other place. A composite indicator for good physician–patient communication was based on three questions: (i) “The last time you visited a doctor, did the doctor listen to everything you had to say, to most, to some, or only a little of what you had to say?”; (ii) “During the visit, did you understand everything the doctor said, most of what the doctor said, some, or only a little of what the doctor said?”; and (iii) “Did you have questions about your care or treatment that you wanted to discuss but did not?”. Respondents who selected “everything” or “most” on the first two questions and “no” on the third question were coded as 1 on this indicator; all others were coded as 0.

The most important health care–related factor for the purposes of this study was perceived racial/ethnic bias in health care. This variable was constructed from the following two items: “Thinking of all of the experiences you have had with health care visits in the last two years, have you ever felt that the doctor or medical staff you saw judged you unfairly or treated you with disrespect because of your race or ethnic background?” and “Do you think there was ever a time when you would have gotten better medical care if you had belonged to a different race or ethnic group?”. Respondents who answered “yes” to one of these two questions received a code of 1; all others were coded as 0 for perceived racial/ethnic bias in health care.

Statistical Analysis

After obtaining univariate and bivariate statistics, we estimated nested multivariate logistic regression models of perceived non-adherence for the entire sample. Model 1 included indicators for race/ethnicity along with the enabling, predisposing, and need factors and other control variables, except for the measure of perceived racial/ethnic bias in health care. Model 2 included perceived racial/ethnic bias in addition to all of the independent variables from the first model. The comparison of these two nested models enabled us to examine whether perceived racial/ethnic bias explained any portion of racial/ethnic gaps in perceived non-adherence.

Since the full model yielded a significant, positive effect of perceived bias on perceived non-adherence, we wanted to clarify whether this effect varied among respondents of different racial/ethnic backgrounds. We therefore estimated models separately for Whites, Blacks, Hispanics, and Asians. These models used the same independent variables as the full model. An exception was the language of the interview, which was not used in the

models for Whites and Blacks, since very few of them chose a non-English interview.

The final part of the analysis was an exploration of the reasons for perceived non-adherence. After obtaining univariate statistics on each of the five reasons, we examined whether the likelihood of selecting each reason varied by race/ethnicity.

RESULTS

As summarized in Table 1, 25 percent of the respondents fell into the perceived non-adherence category. Bivariate analyses revealed that the respondents reporting perceived non-adherence were on average younger ($p < .001$). They were more likely to be uninsured ($p < .01$), living in impoverished households ($p < .05$), female ($p < .05$), and born in the United States ($p < .05$). They were also less likely to have public insurance ($p < .01$). They reported poorer communication with their physicians but better health (p 's $< .001$). Notably, bivariate analysis revealed no racial/ethnic differences in perceived non-adherence but showed that respondents in the perceived non-adherence category were more likely than others to report perceived racial/ethnic bias in health care (9 percent vs. 5 percent, $p < .001$).

The multivariate analysis of the relationships between race/ethnicity and perceived non-adherence, reported in Table 2, yielded some surprising findings. Notably, Blacks and Hispanics were *less*, not more, likely to report non-adherence when compared to Whites after adjusting for enabling, predisposing, and need factors and for characteristics of care. These results contrast with previous research on adherence that primarily used objective indicators. In model 1, which included only control variables, Blacks and Hispanics had a 32 percent lower odds of reporting non-adherence than did Whites (Blacks: $p < .01$; Hispanics: $p < .05$). In model 2, respondents who reported racial/ethnic bias in health care were more likely than others to report non-adherence ($p < .01$). The effect of perceived bias was stronger than the effect of any other variable in the model; the odds of non-adherence was 72 percent higher among those reporting bias. The effects of being Black and Hispanic were significantly stronger ($p < .05$) in model 2, indicating that the Hispanic and Black advantage in reported adherence was *larger* once we accounted for perceived racial/ethnic bias in health care. These results contrast with our initial expectation that perceived bias might reduce racial and ethnic gaps in perceived non-adherence but are consistent

Table 1. Characteristics of the Sample for All Respondents and by Perceived Non-Adherence.

	All (<i>N</i> = 5,124)	Perceived Non-Adherence (<i>N</i> = 1,236)	No Perceived Non-Adherence (<i>N</i> = 3,888)	<i>p</i>
Perceived non-adherence (%)	24.7	–	–	–
Race/ethnicity (%)				
White, non-Hispanic	75.9	78.0	75.3	.130 ^c
Black, non-Hispanic	11.3	10.1	11.7	.186 ^c
Hispanic	9.6	8.7	9.9	.313 ^c
Asian, non-Hispanic	3.1	3.2	3.0	.723 ^c
Predisposing factors				
Age (years): ^a mean	45.5	42.0	46.6	<.001 ^d
Education (years): ^b mean	13.5	13.7	13.4	.054 ^d
Female (%)	58.4	63.0	56.9	.012 ^c
Enabling factors				
Household below poverty (%)	10.0	12.3	9.31	.034 ^c
Insurance status (%)				
Private insurance	68.9	69.8	68.6	.574 ^c
Uninsured	11.7	15.3	10.5	.002 ^c
Public insurance	19.4	14.9	20.9	.001 ^c
Born in the United States (%)	89.0	89.5	88.9	.012 ^c
Interview in English (%)	96.2	96.7	96.0	.374 ^c
Region (%)				
West	21.5	22.0	21.3	.701 ^c
Midwest	23.0	21.7	23.4	.435 ^c
Northeast	19.1	20.6	18.6	.299 ^c
South	36.4	35.6	36.7	.648 ^c
Need factor				
Subjective health status, mean	3.5	3.4	3.6	<.001 ^d
Characteristics of health care				
Usual place of care (%)				
Doctor's office/private clinic/outpatient department	79.4	77.3	80.1	.150 ^c
Community health center/public clinic	8.2	9.6	7.8	.159 ^c
Emergency room/other place	8.7	9.9	8.3	.261 ^c
Good physician–patient communication (%)	81.6	68.2	86.0	<.001 ^c
Perceived racial/ethnic bias in health care (%)	5.5	8.6	4.5	<.001 ^c

Source: Data source is Health Care Quality Survey (The Commonwealth Fund, 2001).

Notes: Analyses are limited to Whites, Blacks, Hispanics, and Asians. All estimates are corrected for survey design.

^aTop-coded at 97 years.

^bTop-coded at 19 years.

^cPearson chi-square for independence comparing respondents who reported perceived non-adherence to those who did not.

^d*t*-test for differences in means comparing respondents who reported perceived non-adherence to those who did not.

Table 2. Estimates of Odds Ratios (OR) from Logistic Regression Models of Perceived Non-Adherence for All Respondents.

	Model 1		Model 2	
	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
<i>Race/ethnicity^a</i>				
Black, non-Hispanic	.68 (.51, .90)	.008	.61 (.45, .83)	.002
Hispanic	.68 (.47, .98)	.038	.64 (.44, .93)	.021
Asian, non-Hispanic	.79 (.50, 1.25)	.309	.74 (.47, 1.18)	.204
<i>Predisposing factors</i>				
Age (years)	.98 (.98, .99)	<.001	.98 (.98, .99)	<.001
Education (years)	1.06 (1.02, 1.10)	.003	1.06 (1.02, 1.10)	.003
Female	1.32 (1.07, 1.63)	.008	1.34 (1.09, 1.65)	.006
<i>Enabling factors</i>				
Household below poverty	1.25 (.90, 1.74)	.191	1.23 (.88, 1.71)	.229
<i>Insurance status^b</i>				
Uninsured	1.10 (.81, 1.50)	.527	1.06 (.78, 1.45)	.712
Public insurance	.73 (.53, 1.01)	.056	.74 (.54, 1.02)	.063
Born in the United States	1.09 (.75, 1.57)	.658	1.10 (.76, 1.59)	.628
Interview in English	1.33 (.78, 2.25)	.292	1.41 (.82, 2.42)	.216
<i>Region^c</i>				
Midwest	.98 (.72, 1.33)	.894	.98 (.72, 1.33)	.884
Northeast	1.14 (.84, 1.54)	.393	1.15 (.85, 1.55)	.370
South	.98 (.75, 1.28)	.897	.98 (.75, 1.28)	.895
<i>Need factor</i>				
Subjective health status	.77 (.69, .85)	<.001	.77 (.70, .85)	<.001
<i>Characteristics of health care</i>				
<i>Usual place of care^d</i>				
Community health center/public clinic	1.15 (.81, 1.62)	.438	1.14 (.80, 1.62)	.458
Emergency room/other place	1.10 (.77, 1.58)	.599	1.12 (.78, 1.60)	.547
Good physician-patient communication	.38 (.30, .47)	<.001	.39 (.31, .49)	<.001
Perceived racial/ethnic bias in health care	—	—	1.72 (1.17, 2.54)	.006
Intercept	1.04 (.42, 2.55)	.940	.93 (.37, 2.31)	.870

Source: Data source is Health Care Quality Survey (The Commonwealth Fund, 2001).

Notes: Analyses are limited to Whites, Blacks, Hispanics, and Asians (N = 5,124). All estimates are corrected for survey design. CI = Confidence Interval.

^aReference category is White, non-Hispanic.

^bReference category is privately insured.

^cReference category is midwest.

^dReference category is doctor's office/private clinic/hospital outpatient department.

with the expectation that perceived bias contributes to perceived non-adherence independently of race/ethnicity.

Predisposing and need factors, especially age, gender, education, and health, were decidedly more important than enabling factors in explaining perceived non-adherence. Perceived non-adherence was higher among females ($p < .01$), older respondents ($p < .001$), more educated people ($p < .01$), and those reporting poorer health ($p < .001$). We also estimated a supplementary model in which we included an additional indicator of health, which measured whether the respondent had been diagnosed with a chronic condition (heart disease, cancer, diabetes, anxiety/depression, obesity, or asthma), but the inclusion of this indicator did not change results.

The strongest effect among all of the control variables was observed for physician–patient communication. In model 2, patients reporting good physician–patient communication had a 61 percent lower odds of reporting non-adherence compared to others ($p < .001$). This is not surprising given that communication is an important aspect of the physician–patient relationship, which is a known factor in adherence.

To explore why Blacks and Hispanics perceived their non-adherence as lower than did Whites in multivariate, but not in bivariate, analyses, we also estimated a series of models that excluded independent variables one by one and in logical groups. The model without age yielded a non-significant coefficient for Hispanics. This result suggests that Hispanics are actually less likely to report perceived non-adherence but only after we control for the fact that they tend to be younger (mean age for Hispanics: 39.6 years, for Whites: 46.9 years; t -test comparing Hispanics and Whites: $p < .001$) and that younger people have higher perceived non-adherence. The exclusion of age alone (or of any other independent variable) did not bring the p -value for the Black coefficient above the conventional significance level. However, in a model excluding age along with perceived racial/ethnic bias and good physician–patient communication, we no longer observed significant differences between Blacks and Whites. This result suggests that Blacks are in fact less likely to report perceived non-adherence than are Whites, but only after we take into account the fact that Blacks are younger (mean age for Blacks: 42.3 years; t -test comparing Blacks and Whites: $p < .001$), and that perceived non-adherence decreases with age and with the quality of physician–patient communication, while it increases with perceived bias.

Table 3 contains the results of multivariate models estimated separately by race/ethnicity. It reveals that perceived non-adherence is negatively related to racial/ethnic bias in health care among Blacks ($p < .05$) but not

Table 3. Estimates of Odds Ratios (OR) from Logistic Regression Models of Perceived Non-Adherence by Respondents' Race/Ethnicity.

	White, Non-Hispanic (N = 2,970)		Black, Non-Hispanic (N = 833)		Hispanic (N = 879)		Asian, Non-Hispanic (N = 442)	
	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p
<i>Predisposing factors</i>								
Age (years)	.98 (.97, .99)	<.001	.99 (.98, 1.01)	.336	.99 (.97, 1.01)	.387	.99 (.97, 1.02)	.581
Education (years)	1.05 (1.00, 1.10)	.036	1.08 (.97, 1.20)	.173	1.12 (1.03, 1.22)	.009	.98 (.86, 1.13)	.820
Female	1.33 (1.04, 1.71)	.023	1.17 (.70, 1.98)	.545	1.96 (1.13, 3.39)	.016	1.66 (.77, 3.56)	.195
<i>Enabling factors</i>								
Household below poverty	1.07 (.69, 1.67)	.756	1.34 (.64, 2.81)	.438	1.83 (.93, 3.57)	.078	3.22 (0.94, 11.01)	.062
Insurance status ^a								
Uninsured	1.05 (.69, 1.60)	.810	1.10 (.60, 2.04)	.757	.81 (.41, 1.58)	.531	1.43 (0.50, 4.07)	.503
Public insurance	.85 (.58, 1.25)	.419	.48 (.22, 1.05)	.065	.45 (.18, 1.10)	.080	.46 (.13, 1.60)	.223
Born in the United States	1.04 (.57, 1.89)	.904	1.26 (.49, 3.24)	.634	1.67 (.86, 3.24)	.130	.29 (.09, .95)	.041
Interview in English	—	—	—	—	.92 (.45, 1.85)	.807	3.65 (1.02, 13.02)	.046
Region ^b								
Midwest	.94 (.66, 1.34)	.750	1.42 (.55, 3.71)	.471	.41 (.16, 1.02)	.056	.33 (.06, 1.91)	.216
Northeast	1.06 (.73, 1.53)	.760	1.14 (.41, 3.16)	.803	1.90 (.92, 3.94)	.084	1.20 (.38, 3.73)	.755
South	.89 (.64, 1.23)	.463	1.07 (.46, 2.51)	.873	1.36 (.74, 2.50)	.323	3.37 (1.38, 8.24)	.008
<i>Need factors</i>								
Subjective health status	.76 (.68, .86)	<.001	.87 (.69, 1.10)	.246	.69 (.54, .87)	.002	.81 (.56, 1.18)	.270
<i>Characteristics of health care</i>								
<i>Usual place of care^c</i>								
Community health center/public clinic	1.08 (.68, 1.72)	.742	1.70 (.81, 3.56)	.159	1.22 (.61, 2.44)	.576	.53 (.15, 1.82)	.313
Emergency room/other place	1.17 (.74, 1.87)	.499	.77 (.37, 1.57)	.468	.97 (.41, 2.26)	.935	1.78 (.59, 5.39)	.306
Good physician-patient communication	.37 (.27, .49)	<.001	.62 (.37, 1.03)	.064	.37 (.22, .63)	<.001	.33 (.14, .79)	.013
Perceived racial/ethnic bias in health care	2.17 (.94, 5.03)	.070	1.91 (1.10, 3.32)	.021	1.24 (.65, 2.36)	.516	1.48 (.51, 4.29)	.466
Intercept	2.03 (.67, 6.20)	.212	.19 (.02, 2.03)	.171	.28 (.05, 1.61)	.153	.46 (.03, 6.64)	.570

Source: Data source is Health Care Quality Survey (The Commonwealth Fund, 2001).

Note: All estimates are corrected for survey design. CI = Confidence Interval.

^aReference category is privately insured.

^bReference category is Midwest.

^cReference category is doctor's office/private clinic/hospital outpatient department.

among other groups. It also shows that several relationships specific to Whites, Asians, and Hispanics were obscured in the overall model using all respondents. For Asians, perceived non-adherence increased for respondents interviewed in English ($p < .05$) and among those living in the south ($p < .01$), but decreased among the U.S. natives ($p < .05$). The effects of good physician–patient communication on perceived non-adherence were limited to non-Black racial/ethnic groups (Whites and Hispanics: $p < .001$; Asians: $p < .05$), while associations between self-reported non-adherence and independent variables such as self-reported health, educational attainment, and gender were limited to Whites and Hispanics.

To gain better understanding of the meaning of our perceived non-adherence measure, we analyzed the reasons respondents gave for not following their doctor's advice. The most common reason was disagreement with the doctor's recommendation, reported by 40 percent of respondents in the perceived non-adherence category. Finding adherence too difficult, cost barriers, and incompatibility of the recommendation with the patient's personal beliefs were each chosen by about a quarter of respondents reporting perceived non-adherence (28 percent, 25 percent, and 22 percent, respectively). Difficulties in understanding doctors' recommendations were less common (7 percent). A third of the respondents (33 percent) chose more than one reason. Disagreement with recommendations and incompatibility with personal beliefs was the most common combination of reasons (16 percent), followed by the combination of cost barriers and finding adherence too difficult (9 percent).

Table 4 indicates how the reasons for perceived non-adherence vary by race/ethnicity. Compared to white respondents, minority respondents were significantly more likely to report that they did not follow the doctor's advice because they did not understand what they were supposed to do (p 's $< .01$). Hispanics were more likely to report cost barriers ($p < .01$), and Asians more commonly said that following the recommendation was too difficult ($p < .01$).

DISCUSSION

The goal of this study was to examine racial/ethnic variation in perceived non-adherence. We found that once we adjusted for predisposing, enabling, need-based, and health care–related factors, Blacks and Hispanics were less likely to report perceived non-adherence compared to Whites. These racial/ethnic differences in perceived non-adherence were even larger once we

Table 4. Reasons for Perceived Non-Adherence by Respondents' Race/Ethnicity.

	White, Non-Hispanic (<i>N</i> = 782)	Black, Non-Hispanic (<i>N</i> = 210)	<i>p</i>	Hispanic (<i>N</i> = 210)	<i>p</i>	Asian, Non-Hispanic (<i>N</i> = 114)	<i>p</i>
	%	%		%		%	
You did not follow the doctor's advice or treatment plan because:							
You didn't understand what you were supposed to do	5	13	0.003	16	<0.001	16	0.003
You disagreed with what the doctor wanted to do	39	40	0.794	34	0.395	44	0.471
It cost too much	24	30	0.212	42	0.001	24	0.939
It was too difficult to do	25	27	0.807	31	0.272	47	0.002
Doctor's advice went against your personal beliefs	20	13	0.060	26	0.183	30	0.110

Source: Data source is Health Care Quality Survey (The Commonwealth Fund, 2001).

Notes: Only respondents who reported perceived non-adherence are included in this analysis. All estimates are corrected for survey design. *p*-values are for Pearson chi-square for independence comparing Whites to each minority category.

accounted for perceived racial/ethnic bias in health care. Given that in some of the previous studies that used objective measures of non-adherence, such as obtaining blood test reports or tracking whether patients fill prescriptions, racial/ethnic minorities had higher, not lower, levels of non-adherence, our results pose the question: Do Blacks and Hispanics perceive their non-adherence as lower than it really is?

Such underreporting could occur, for instance, if patients misunderstand the doctor's recommendations. Patients who do not fully understand which types of behaviors constitute non-adherence may perceive themselves as adherent despite the fact that they have not really followed the doctor's specific recommendations. Minority patients reported more frequently that they did not comply with the doctors' advice because they did not understand what they were supposed to do. In some cases, lack of understanding may be caused by language barriers, but cultural barriers are more generally likely to play a role regardless of language, especially when there is a lack of concordance between the doctor's and the patient's racial/ethnic backgrounds.

However, what if minority patients understand that their levels of adherence are relatively low, but still *choose* to report their non-adherent behavior less often than do Whites? This type of underreporting could be the

result of distrust in the research process. Minority individuals, especially Blacks, tend to be aware of the history of racial discrimination in medical research (Corbie-Smith, Thomas, Williams, & Moody-Ayers, 1999) leading them to trust researchers less, especially when the researcher conducting the interview is of a different race than the respondent (Krysan & Couper, 2003). Fortunately, the data in our study were collected over the telephone, making it impossible for the respondents to directly observe their interviewers' race. Some residual racial or ethnic clues could have still been transmitted verbally, possibly leading to some distrust and underreporting of non-adherence among minorities (more so than among whites). Overall, however, we believe that because of the use of telephone interview, intentional underreporting specific to minority patients was relatively minor.

Our findings have several implications for policy. If health care providers are aware of the disconnect between perceptions of adherence suggested by our findings and more objective rates, they can develop better tools for improving adherence. Since an incomplete understanding of the physician's recommendations plays a role in some minority patients' non-adherence, and possibly in its underreporting as well, it is important to increase understanding and to better educate patients. These efforts should be targeted at improving physicians' communication skills, as well as providing educational resources to patients that would help them better understand what is required of them in terms of compliance.

Larger scale changes, including improved representation of minorities in American medicine, may have additional positive effects on adherence among minority patients. Many American medical schools try to attract minority applicants. An increase in the representation of minorities in the medical work force holds promise for improving the overall quality of care for minority patients. Increasing the supply of minority doctors will make it possible for more minority patients to have a racially concordant physician-patient relationship. Racial/ethnic concordance has demonstrated benefits for physician-patient communication, patient understanding, satisfaction, and various other health care outcomes (LaVeist & Nuru-Jeter, 2002; Saha, Komaromy, Koepsell, & Bindman, 1999; Stepanikova, 2006). These benefits stem from the removal of cultural and language barriers that are present when the physician's and patient's race and ethnicity do not match. The very same barriers play a role in patient misunderstanding and eventual non-adherence.

One advantage of our study is that it used multivariate analysis to rule out potential confounding factors and some known sources of bias. Recall bias, for instance, is a concern in any study that uses subjective reports and may

have been a larger problem in this study than in some of the previous empirical work, since our measure of perceived non-adherence asked about the past two years, while other studies typically covered a shorter period of time. Nevertheless, to argue that recall problems explain the racial/ethnic patterns we found, we would have to believe that compared to White patients, minority patients suffer from recall problems disproportionately more often *even after we account for control variables typically associated with recall*, such as educational levels, age, health status, and the quality of communication. In other words, there would need to be something inherent about being a member of a minority group that makes people forget about their non-adherent behavior. Obviously, such an argument is difficult to sustain. We therefore conclude that recall difficulties may have led to a general underreporting of non-adherence, but it is unlikely that recall problems affected more minority patients than Whites and thus they could not explain the racial/ethnic patterns reported here.

Importantly, we found that for non-Hispanic Blacks, perceived non-adherence increased with the experience of racial/ethnic bias. To our knowledge, this finding is novel; yet, it is not surprising given that Blacks face a long history of discrimination in health care as well as in other areas of their lives. The legacy of discrimination in the United States including slavery, Jim Crow racism, and the conduct of unethical medical research such as the Tuskegee experiment makes Blacks vulnerable to overall negative perceptions of their health care (Saha, Arbelaez, & Cooper, 2003; Blanchard & Lurie, 2004). Such negative experiences possibly contribute to the association between perceived bias and perceived non-adherence, since in a sense both reflect subjective perceptions of the health care process (though the former to a larger degree than the latter). On the contrary, Blacks in this study were no more likely than Whites to report that they did not follow their doctor's advice because they disagreed with the doctor or because the advice went against their personal beliefs. Arguably, disagreement and belief differences are indicative of generally negative perceptions of the health care providers, but these factors were not more prominent among Blacks.

Data collected from a probability sample of the national population enabled us to obtain results that are more generalizable compared to results from some of the previous studies, but one remaining limitation to the generalizability of our findings includes our focus on respondents who have received health care within the past two years. Since only individuals with a recent health care experience were asked about their adherence, our results

are not generalizable to individuals who have been outside of the health care system (and have not yet received health care) for two years or longer.

Overall, our study underscores the need for attention to patients' subjective experiences and their perceptions of the health care process. If we understand more about how patients of different racial and ethnic backgrounds perceive the health care process and their own participation in it (e.g., adherence to medical recommendations), we may be better equipped to specifically target each groups' unique needs and to prevent potential problems of low adherence or compliance. Ultimately, this research may help us design health care systems that are more responsive to all the needs of all patients in an increasingly diverse society.

ACKNOWLEDGMENT

We thank the Commonwealth Fund for providing a dataset used in this study.

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DISPARITIES IN PRIMARY CARE BY RACE AND ETHNICITY AMONG MEDICAID CHILDREN IN CALIFORNIA[☆]

Arpita Chattopadhyay

ABSTRACT

This study examines the variation in preventable hospitalization rates of Medicaid children in California to extend our understanding of racial and ethnic disparity in primary care quality. The results show that primary care quality varies substantially by race and ethnicity even when financial access is ensured by Medicaid. Moreover, the domain of primary care that minority children experience disadvantage varies by race and ethnicity. Compared to white children, African-American children lack continuity and comprehensiveness of care that is necessary for the management of chronic conditions. Hispanic children, on the contrary, have inadequate first contact care. Asian children experience a better quality of care overall than white children. Independent of race, a primary language other than English has a protective effect on preventable

[☆]An earlier version of this paper was presented at the 2006 Annual meeting of the Population Association of America.

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 67–81
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027006**

hospitalization rates, indicating that language need not be a barrier to quality primary care for racial and ethnic minority groups. The possible reasons underlying the observed differences in health outcome by race/ethnicity and primary language are discussed.

INTRODUCTION

Racial and ethnic barriers in various aspects of health care have been extensively documented. Minority race has been linked to lower likelihood of having a regular source of care and fewer physician visits (Fiscella, Franks, & Clancy, 1998; Lieu, Newacheck, & McManus, 1993; Weinick & Krauss, 2000), receiving fewer routine preventive services (Gornick et al., 1996; Lieu et al., 1993), and poorer quality of care (Kahn et al., 1994; Ayanian, Weissman, Chasan-Taber, & Epstein, 1999). While health disparities have been shown to exist for both adults and children on multiple domains of health care, the focus on primary care of children is particularly salient. Children's health care needs are mostly in the realm of preventive and acute care – the hallmarks of primary care. Moreover, children, especially minority children are more likely to be covered by public health insurance programs such as Medicaid emphasizing the need for continuous assessment of their primary care to public health policy makers (Mills, 2001).

Although several studies have described disparities in primary care for children, (Committee on Pediatric Research, 2000; Stevens & Shi, 2003) only one study (Weech-Maldonado et al., 2003) has examined it in the context of a public insurance program such as Medicaid. The study used subjective measures of perceptions of care as a measure of primary care quality raising concerns about the confounding effects of racial and ethnic variation in expectations of care with reports of care rating.

Preventable hospitalizations or hospitalization rates for ambulatory care sensitive conditions (ACSCs), such as asthma, dehydration, and pneumonia, that can be managed with timely and effective treatment in a primary care setting have been identified in the literature as an objective measure of primary care quality (Agency for Health Care Research and Quality, 2003). Hospital admissions for these conditions reflect a deterioration in primary care access and quality (Bindman et al., 1995; Casanova & Starfield, 1995).

The aim of the present study is to analyze the variation in hospitalization rates for ACSCs in a large Medicaid program to improve our understanding of racial and ethnic disparity in primary care among children. I examine how race/ethnic disparity varies in the two domains of primary care – first

contact care, which involves having access to a doctor for a new health problem, and care management, which includes primary care attributes such as continuity, comprehensiveness, and coordination of care (Starfield, 1998).

DATA AND METHODS

This study uses a specially created data file that linked annual files of the California discharge database with eligibility records of the California Medicaid (Medi-Cal) beneficiaries for the period 1996–1999. The California hospital discharge record includes information on admission month, year, and diagnosis codes. Every hospital discharge in California during the study period was linked, using a combination of deterministic and probabilistic matching techniques to an individual Medi-Cal beneficiary in the monthly enrollment file maintained by the California Department of Health Services (Rains & Tagupa, 2001). Detailed information on the enrollee's eligibility status, race/ethnicity, principal language spoken, county of residence, and health plan were appended to the hospital discharge record.

Data on the size of the “at risk population” for the calculation of the hospitalization rates by age, gender, race/ethnicity, language, county of residence, and health plan type for each month of the period 1996–1999 were obtained from California Department of Health Services' Medi-Cal Monthly Eligibility File (MMEF). Because ambulatory care sensitive hospitalization rate is an indicator of health care quality at the outpatient setting, that is before arriving at the hospital, only beneficiaries who were enrolled in Medi-Cal the month before hospitalization were considered to be in the risk pool. The 5% of the admissions that were for patients who gained Medicaid coverage because of the hospitalization (Chattopadhyay & Bindman, 2005) were not considered.

Commonly accepted lists of conditions (Table 1) defined with diagnostic codes for the primary cause of hospital admission were used to calculate the number of hospitalizations for ACSCs (Agency for Health Care Research and Quality, 2003).

Using the multivariate Poisson regression analysis, the monthly ACSC admission rate was modeled as a function of race/ethnicity (African American, Asian and Pacific Islander, Hispanic, non-Hispanic White, and other/missing race ethnicity), controlling for the principal language spoken at home (English, Spanish, Asian, and others), Medi-Cal delivery model (fee-for-service and managed care), admission month, admission year,

Table 1. Distribution of Ambulatory Care Sensitive Condition Hospitalizations among Medicaid Children in California, 1996–1999.

Condition	Number of Discharges	Percentage
Acute		
Dehydration	16,788	13.8
Gastroenteritis	17,359	14.3
Urinary Tract Infection	11,877	9.8
Pneumonia	35,907	29.6
Ruptured appendix	322	0.3
Chronic		
Asthma	34,865	28.7
Diabetes	3,422	2.8
Chronic Obstructive Pulmonary Disease	27	0.0
Congestive Heart Failure	556	0.5
Hypertension	198	0.2
Angina	1	0.0
Amputation	6	0.0

child's age (0–1, 2–5, 6–10, 11–15, 16–18 years), and sex. The Pearson scale factor corrected any remaining overdispersion in the model (McCullagh & Nelder, 1989).

Structural considerations and previous literature guided the choice of independent variables. One important factor to control for in studies of quality of care is variations in characteristics of health insurance or the health care delivery system that influences care seekers' access to health services but do not determine the actual use of care or quality of that care (Andersen & Davidson, 1996, p. 17). These are variables such as having health insurance or having a regular care provider. By focusing only on Medicaid insurance, and by further including a variable for managed care, this study controls for potential access factors.

One articulated goal of Medi-Cal's managed care policy is to improve beneficiaries' access to primary care. As opposed to Medi-Cal fee-for-service, Medi-Cal's managed care requires beneficiaries to have a regular source of primary care and relies heavily on health maintenance or primary prevention. However, racial/ethnic minority members who speak a language other than English may not have access to health education that promotes primary prevention. Moreover, patients' inability to comprehend physician instruction can lead to poor compliance and underuse of physician services (Derose & Baker, 2000). To control for language barriers that may undermine some of the benefits of Medicaid insurance and managed care

among low-income children, we control for primary language spoken at home (English, Spanish, Asian, or another language).

Limited English proficiency of many minority members confounds the analysis of racial and ethnic differences. Disentangling the effects of language from race/ethnicity is very important and provides insight into the mechanism that generates racial disparity. Disparities in primary care arising from language ability, which are amenable to change and can be addressed relatively easily by providing linguistic services, are structurally very different from disparities by race or ethnicity.

The empirical evidence of the effect of race and ethnicity in the presence and absence of English language ability on primary care quality is, however, not clear. Some report that controlling for English language ability eliminates the disparities between Asian, Hispanic, and white children (Weinick & Krauss, 2000; Weech-Maldonado et al., 2003). While other studies (Seid, Stevens, & Varni, 2003; Stevens & Shi, 2002) found that controlling for language reduced, but did not eliminate reported racial and ethnic disparities.

To eliminate differences in primary care attributable to temporal changes in Medi-Cal policy and physician practice pattern that may affect hospitalization rates for ACSC, I include a control for year of admission. The influence of geography in medical practice, hospital bed supply, and service delivery in Medi-Cal that influences hospitalization rates in a region cannot be ignored in statistical measurement of racial disparity (Chandra & Skinner, 2003), especially given the extent of racial and ethnic segregation in residence. I therefore introduced a control for the county of residence. Some of the ACSCs such as pneumonia and asthma are seasonal. The variable for month of admission was included to control for the seasonality in ACSC hospitalization.

The independent variables were captured for each admission and then aggregated to obtain the number of ACSC hospitalizations for groups with each combination of characteristics. Such an approach can accommodate changes in individual characteristics over time, such as type of health plan or the county of residence of a beneficiary. However, since the patient discharge and enrollment files were linked to the discharge year, Medicaid enrollment status and health plan at the time of hospitalization for admissions that resulted in discharges in a different calendar year could not be accurately determined. Less than 1% of admissions had discharges in a subsequent year and these were excluded from the analysis. I also had to exclude January discharges (14%) as it was not possible to determine if the patient was enrolled in Medicaid in the month before the hospitalization.

Separate analyses for hospitalizations for acute and chronic ACSCs were conducted, as these reflect different attributes of primary care. Hospitalization

for acute ACSCs such as dehydration and pneumonia reflects deficiency in first contact care, which involves having access to a physician so that patients have a designated doctor to go to for a new health problem (Starfield, 1998). Hospitalizations for chronic ACSC such as asthma, on the contrary, may indicate a lacking in continuity or comprehensiveness of care.

RESULTS

Table 2 summarizes the key demographic characteristics of the Medicaid children in California during 1996–1999. About three-quarters of the

Table 2. Characteristics of the Medicaid Children in California by Race and Ethnicity, 1996–1999.

	Percentage of Children				
	African American	Asian	Hispanic	Other ^a	White
<i>Age (years)</i>					
0–1	9	5	9	9	8
2–5	27	20	31	25	26
6–10	32	29	32	31	32
11–15	22	31	20	25	24
16–18	9	15	8	10	10
<i>Gender</i>					
Male	49	51	50	51	50
Female	51	49	50	49	50
<i>Primary language spoken at home</i>					
Asian	0	69	0	1	1
English	98	28	49	76	90
Spanish	0	1	51	2	0
Other ^a	2	3	0	20	8
<i>Health care delivery</i>					
HMO	66	62	57	38	48
FFS	34	38	43	62	52
Total person-months	14,308,368	8,618,147	33,668,332	8,91,790	18,402,963
Total children	3,25,190 (19%)	1,95,867 (11%)	7,65,189 (44%)	20,268 (1%)	4,18,249 (24%)

^aIncludes missing values.

children in the Medi-Cal program are from minority groups, 42% of whom do not speak English at home. As expected, language use at home varies by race and ethnicity. Ninety percent of white children speak primarily English at home. African-American children also predominantly speak English at home (98%). The corresponding numbers for Hispanic and Asian children are 49% and 28% respectively. Fifty one percent Hispanic children and 69% Asian children report speaking Spanish and Asian language at home respectively ($p < .001$ for all pairwise comparisons). Despite the language barrier, children of all minority racial and ethnic groups except the “other” category are more likely to be in managed care compared to white children ($p < .001$ for all comparisons).

There is substantial variation in preventable hospitalization rates by race/ethnic group. The average unadjusted ACSC hospitalization rate for white children in Medi-Cal during 1996–1999 was 7.7 per 10,000 person-months (std. error .08), while for African-American and Hispanic children it was 9.6 (std. error .14) and 9.2 (std. error .31) respectively. Asian children had a lowest unadjusted ACSC hospitalization rate (4.6 per 10,000 person-months; std. error .25; $p < .001$ for all pairwise comparisons).

Table 3 summarizes the effects of race/ethnicity, language, and health care delivery on hospitalization rates for ACSCs among Medi-Cal Children. We find that African-American and Hispanic children in Medicaid have a 21% ($e^{.19} = 1.21$; $p < .001$) and 13% ($e^{.12} = .13$; $p < .001$) higher rate of preventable hospitalization compared to white children indicating that minority children have barriers to good quality primary care even with Medicaid insurance. However, Hispanic children whose primary language is Spanish overcome most of the disadvantage ($e^{.12-.10} = 1.02$; $p = .11$). Asian children on the contrary experience better quality of primary care than white ($e^{-.17} = .85$; $p < .001$) and other children. In addition, speaking an Asian language further lowered hospitalization rates for preventable conditions by about 21% ($e^{-.24} = .79$; $p < .001$).

When we examine racial and ethnic differences for hospitalization for acute and chronic preventable conditions separately, we find that the Hispanic disadvantage remains strong in the case of acute conditions ($e^{.18} = .84$; $p < .001$), and the beneficial effect of Spanish language largely vanishes. On the contrary, in the case of chronic ACSCs, the Hispanic disadvantage largely disappears, but the Spanish language advantage becomes even stronger ($e^{-.30} = .74$; $p < .001$). This suggests that Hispanic children lack quick access to primary care, but enjoy better continuity and coordination of care for chronic conditions such as asthma. The association of Spanish language at home and lower hospitalization rates could be

Table 3. Effects^a of Race/Ethnicity, and Primary Language on Ambulatory Care Sensitive Condition Hospitalization Rates among Medicaid Children in California, 1996–1999.

Variables	All ACSC	Acute Conditions	Chronic Conditions
<i>Race/ethnicity (reference category – White)</i>			
African American	0.19***	–0.14***	0.54***
Asian	–0.17***	–0.08	–0.32***
Hispanic	0.12***	0.18***	–0.01
Other ^b	1.02***	0.94***	1.05***
<i>Primary language spoken at home (reference category – English)</i>			
Asian	–0.24***	–0.13*	–0.38***
Spanish	–0.10***	–0.01	–0.30***
Other ^b	0.13**	0.07	–0.18**
<i>Health care delivery (reference category – fee-for-service)</i>			
Managed care	–0.32***	–0.44***	–0.15***

Note: ACSC, ambulatory care sensitive condition.

* $p < .01$; ** $p < .004$; *** $p < .001$.

^aAdjusted for year, month, age, sex, and county of residence.

^bIncludes missing category.

attributable to better care management. It could also be an indicator a lower prevalence of chronic conditions among Spanish-speaking Hispanic children.

In contrast to Hispanic children, the opposite seems to be true for African-American children. Because African-American children have a 13% ($e^{-.14} = .87$; $p < .001$) lower rate of hospitalization for acute ACSCs than white children, they most likely have adequate first contact care. However, these children have a 72% ($e^{.54} = 1.72$; $p < .001$) higher hospitalization rates for chronic ACSCs than white children indicating that their primary care is deficient in care management practices to control flare-ups in chronic conditions.

Asian children in Medi-Cal are hospitalized for acute ACSCs at about the same rate as non-Hispanic white children ($e^{-.08} = .92$; $p = .08$). For chronic conditions, the hospitalization rates of Asian children is 27% ($e^{-.32} = .73$; $p < .001$) lower than white non-Hispanic children. Speaking an Asian language at home is associated with even lower hospitalization rates for acute and chronic conditions. Indeed, Asian children who speak an Asian language at home have a hospitalization rate for chronic ACSCs that is only 50% ($e^{(-.32-.38)} = .50$; $p < .001$) of the rate for English-speaking non-Hispanic white patients. However as in the case of Spanish-speaking

Hispanic children, some of this may be attributable to lower prevalence of chronic conditions in Asian American children.

As compared to fee-for-service health care delivery mechanism, managed care is associated with significant declines in hospitalization rates in both acute and chronic conditions. The effect of managed care in reducing preventable hospitalization is more in the case of acute conditions than chronic conditions ($e^{-.44} = .64$ vs. $e^{-.15} = .86$; p for difference $< .01$). This implies that access to physicians through the assignment of a primary care physician as a usual source of care has been more effective in improving primary care quality than the health maintenance and care management initiatives in Medicaid managed care.

DISCUSSION AND CONCLUSION

Medi-Cal, California's Medicaid program, is the largest state Medicaid program in the country. Medi-Cal provides health insurance to roughly 2.2 million children, 75% of who belong to a minority race and 44% speak a language other than English at home. In this study, I examined the effect of race/ethnicity and primary language spoken at home on primary care quality among Medi-Cal children using a large administrative database and an objective measure of quality of primary care. The study confirms that racial and ethnic disparity in primary care quality, as measured by preventable hospitalization rate, exists even after financial access to health care has been assured by Medicaid and managed care has ensured a regular physician. African-American and Hispanic children in this population have significantly worse quality of primary care than white children. Black race and Hispanic ethnicity have been known to be associated with higher preventable hospitalization rates (Friedman & Basu, 2001) and worse primary care for children (Lieu et al., 1993; Newacheck, Hughes, & Stoddard, 1996). However, some studies have shown that ethnic disparity is eliminated once language is controlled, particularly for Hispanic children (Weinick & Krauss, 2000; Weech-Maldonado et al., 2003). In this study, we see that disparities persist for African-American and Hispanic children even after controlling for language. This difference in finding can be attributed to several methodological differences between the studies.

Earlier studies used subjective ratings of care (Weech-Maldonado et al., 2003) or focused only on a single aspect of primary care – the presence of a regular source of care (Weinick & Krauss, 2000) as a measure of primary care quality. Subjective ratings of care are inherently problematic

as they often capture cultural expectations and perceptions of care and may be subject to recall and reporting bias. Neither is it appropriate to measure primary care quality by the presence or absence of a regular source of care since that represents a structural feature of potential access and not quality (Andersen & Davidson, 1996). This study is an improvement over these earlier studies because it uses a validated objective measure of primary care quality while controlling for potential access by including a variable for managed care, which compels beneficiaries to sign up with a primary care physician.

The only study that used an objective and validated measures of primary care finds, as in this analysis, that racial and ethnic differences in potential access to care is reduced, but not eliminated by controlling for language ability (Seid et al., 2003). Other studies that use detailed characteristics of primary care, such as physician contact or waiting time at clinics and receipt of preventive care, also show that racial disparities persist regardless of language skills (Stevens & Shi, 2002).

We find that Asian children experience better quality of primary care and lower hospitalization rates for preventable conditions than white children. This finding is consistent with previous studies on adults (Bindman, Chattopadhyay, Osmond, Huen, & Bacchetti, 2005) and infants (Cohen & Christakis, 2006) in Medicaid, but varies from studies based on the general population (Weech-Maldonado et al., 2003; Stevens & Shi, 2002).

According to our results, speaking a language other than English does not result in worse primary care among Medicaid children in California. However, studies that have used subjective ratings of access and satisfaction show people with limited English proficiency, particularly Asians report barriers to care (Merendith & Siu, 1995; Murray-Garcia, Shelby, Schmitdiel, Grumbach, & Quesenberry, 2000; Seid et al., 2003; Snyder, Cunningham, Nakazono, & Hays, 2000; Weech-Maldonado et al., 2003). As discussed earlier, subjective ratings of care are inherently problematic as they often capture cultural expectations and perceptions of care and may be subject to recall and reporting bias. The use of ACSC hospitalization rates, which is an objective and validated measure of primary care quality, instills greater confidence in the results of this analysis.

There may be several possible explanations for lower preventable hospitalizations among people whose primary language is not English. First, persons who speak their native language at home may be more embedded in the ethnic community, which offers a protection for adverse health outcomes such as ACSC hospitalization, especially for chronic conditions that has a window of time during which social capital may be mobilized. Primary

language in this case is possibly measuring the social network effect. Alternatively, persons who do not speak English at home are more likely to be recent immigrants, and the lower preventable hospitalization rates associated with such persons could be a reflection of the “migration selection effect” and lower prevalence of chronic conditions such as asthma, which accounts for over 92% of preventable hospitalizations for chronic conditions in this population (Table 1). There is a growing literature that documents declining health status of immigrants as they assimilate in the United States (DeLia, 2003). Data from the California Health Interview Survey also show that the prevalence of Asthma is lower among those who primarily speak a language other than English at home than those who speak English.

The effect of race/ethnicity and language differs by condition. Preventable hospitalizations for chronic and acute conditions reflect different facets of primary care. Acute conditions reflect deficiency in “first contact” care, whereas admissions for chronic ACSCs reflect deficiencies in care management. Results suggest that Hispanic children lack immediate access to primary care, whereas African-American children suffer from poor care management. Only Asian-American children and particularly Asian-American children who speak an Asian language at home experience better quality in both domains of primary care than non-Hispanic white English-speaking children. Lower rates of hospitalization for persons with a non-English primary language are seen mostly in chronic care management. This seems reasonable if non-English primary language is an indicator of the strength of social support since shared knowledge and experience derived from social support is more likely to influence health maintenance/care management than physician contact necessary for a timely intervention of an acute condition.

In addition to demographic variables, health care delivery model accounts for large differences in the quality of primary care received by children in Medi-Cal. Managed care is associated with a lower rate of preventable hospitalization. This keeps with earlier findings on managed care and preventable hospitalization rates on adults (Bindman et al., 2005). In addition, managed care depresses the hospitalization rates for both acute and chronic conditions indicating that managed care improves access to first contact care, as well as long-term aspects of primary care such as care management, continuity of care, and comprehensiveness of primary care. However, unlike language, the association of managed care is stronger in improving first access to physician than care management implying that access to physicians through the assignment of a primary care physician as a usual source of care has been more effective in improving primary care quality than the health maintenance and care management initiatives in Medicaid managed care.

We do not find any evidence that language barriers undermine any of the gains derived from managed care among Spanish-speaking Hispanic children and Asian children speaking Asian language. Studies (Weech-Maldonado et al., 2003; Wilson, Chen, Grumbach, Wang, & Fernandez, 2005; Kominsky, Reifman, Cameron, & Roby, 2006) that report trouble in interpretation and communication of linguistic minorities at the health care setting do not factor in social and individual resources patients use to overcome these difficulties. Because non-English language has a significantly negative impact on preventable hospitalization rates for chronic conditions only, it is likely that persons with a primary language other than English use personal and social resources outside of the health care system to overcome language problems.

The study represents several improvements over previous studies. First, we get an insight into the different causes underlying disparity in primary care quality by race, ethnicity, and language for the first time. Second, by using statewide administrative data, we are able to study Asian children as a separate group. Much of previous research on language proficiency and health care disparity examined the Hispanic population only. Third, ambulatory care sensitive hospitalization rate represents an objective measure of primary health care quality, as opposed to patient/parent perceptions, which are influenced by respondent expectations. Finally, this analysis enables the estimation of language proficiency and race/ethnicity effects independent of structural factors such as health insurance and health care delivery model.

The study also has a few limitations. This analysis is confined to Medicaid children in California. The focus on a homogeneous population with similar socioeconomic and financial access to health care reduces the risk of errors in estimation arising from inaccurate measures of income, wealth, and socioeconomic status. However, this limits the generalizability of the results to other populations. Exclusion of January admissions from the analysis may also potentially bias the analysis if some racial/ethnic groups have a higher propensity of being hospitalized in January compared to other race/ethnic groups. However, I did not find significant racial/ethnic difference in the proportion of January admissions.

Finally, variation in preventable hospitalization rates may also be attributed to differences in disease prevalence and differential admission thresholds among racial, ethnic, and linguistic groups rather than primary care quality. This analysis does not fully account for these sources of variation. The bias due to this omission is however expected to be small. Almost two-thirds of the conditions in this study are acute conditions. Therefore, variation in disease prevalence rates is not relevant for

hospitalization for majority of the conditions. Secondly, studies have not found any race- or language-based differentials in admission criteria in Emergency room, which is the source of most hospital admissions for ACSCs (Oster & Bindman, 2003; Rogers, Delgado, & Simon, 2004). Nevertheless, these factors may be operating in California and underlie the racial, ethnic, and linguistic variation in preventable hospitalization rates. Future research should address the extent to which lower hospitalization rates for chronic conditions among Asian Americans and linguistic minorities are a reflection of lower disease prevalence, decreased access to hospital care, or superior social resources.

ACKNOWLEDGMENT

I thank the Office of the Statewide Health Planning and Development, California for making the data available.

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SOCIAL SOURCES OF DISPARITIES IN USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE

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ABSTRACT

Complementary and alternative medicine (CAM) as a topic of research and as an approach within the health care delivery system has become increasingly accepted. Aided by the holistic movement, and after a century and a half of striving for legitimacy, CAM is also increasingly becoming more accepted by mainstream medicine. This chapter reviews the social sources of disparities in use of CAM, with a greater focus on English-speaking countries, and especially the US. This chapter will briefly highlight the basic underlying principles of CAM as linked to its history and discuss types of CAM. The major focus of this chapter will be a review of the literature on social factors and use of CAM, looking at such factors as age, gender, socioeconomic status, race/ethnicity and immigration status, and health status. As part of this, we will also discuss the integration of CAM and conventional care. In conclusion, future directions for social science research in CAM will be discussed, specifically elaborating on the importance of the social sciences linking CAM with other growing interests in health and wellness.

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 83–107
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027007**

Complementary and alternative medicine (CAM) as a topic of research and as an approach within the health care delivery system has become increasingly accepted. Within the US, one sign of this acceptance has been the creation of a research infrastructure within the National Institutes of Health. Within the United Kingdom, national level data have been collected through the Office for National Statistics, indicating growing interest in the topic in the UK although much of CAM in Great Britain remains in the private sector, unsupported by the British National Health Service. The utilization of CAM has increased significantly in the last decade in places such as Europe, Australia, Canada, and the US. In Europe, approximately one-third of the population reported using at least one type of CAM with Italy, the Czech Republic, and Switzerland having the highest levels of CAM use, 48.6% to 73.1% (Molassiotis et al., 2005). In Australia, an estimated 52.2% of the population had used CAM in 2004 (MacLennan, Myers, & Taylor, 2006), while the Canadian government estimates that 20% of the Canadian population had contacted a CAM provider in 2003 (Park, 2005). In 1993, an estimated 35% of the US population used CAM, which included using prayer. That number increased to 42% in a 1997 follow-up study (Eisenberg et al., 1998). In the UK, an estimated 10% of the population had received a CAM therapy from a practitioner in the past year (Thomas & Coleman, 2004). An estimated 6.5% of the population had used one of the five main therapies in the UK: acupuncture, homeopathy, chiropractic, osteopathy, or herbal medicine. Estimates of CAM use were similar in England, Scotland, and Wales. Another recent study estimates that there has been an increase in the use of CAM in the UK population in recent years (Maha & Shaw, 2007).

There is some evidence that CAM is viewed in different ways by different people (Bishop, Yardley, & Lewith, 2008). Some scholars (Heller & Spurr, 2005) argue, following the approach of Giddens (1991), that the growth of interest in CAM is part of changes in late modernity that include more assertive consumers who accept a greater diversity and set of ideas, and this can include CAM. Given its growing acceptance within medicine and the growing interest within social sciences of understanding CAM, this review chapter will highlight the basic underlying principles of CAM as linked to its history. The major focus of this chapter will be a review of the literature on social factors and use of CAM, looking at such factors as age, gender, socioeconomic status, race/ethnicity and immigration status, and health status. As part of this, we will also discuss the integration of CAM and conventional care. In conclusion, future directions for social science research in CAM will be discussed, specifically elaborating on the

importance of the social sciences linking CAM with other growing interests in health and wellness.

BASIC UNDERLYING PRINCIPLES OF CAM AS LINKED TO ITS HISTORY

Medical treatments that are today considered “alternative” have been in use for millennia. Ancient Egyptians, Romans and Greeks used massages for healing illness. Likewise, Hindu practitioners have used meditation for healing for thousands of years. In the US, CAM has, in some forms, been around since the beginnings of the US, however, what we now consider CAM sought legitimacy and popularity beginning in the 1800s with a dramatic rise of alternative medicines including herbal remedies and homeopathy, followed by osteopathy and chiropractic medicine (Whorton, 2002). By the 1900s, “regular” doctors sought to limit alternative practitioners’ influences on the medical field through medical licensing to bar alternative healers from practicing medicine in the US. In the 1920s, orthodox physicians successfully campaigned for a new law, the Basic Science Act, which required any practitioner, orthodox and unorthodox alike, to pass an examination in anatomy and physiology. In response to this new law, alternative medical schools increased the level of instruction. In the 1960s, osteopathic medical schools in the US began to receive state funding and reimbursement under the Medicare system (Whorton, 2002). The struggle for CAM practitioners to gain acceptance eased, and dissatisfaction with regular medicine gave rise to the Holistic Philosophy, which emphasized treating the whole patient and not just the disease. By the mid-1970s, holistic health centers were being established, which combined orthodox medicine with alternative medicine. During the 1980s, the popularity of alternative medicine continued to increase. Homeopathic medicines were sold in conventional drugstores. Today, in the US, osteopathic practice is not considered a part of CAM, although it remains a part of CAM within the UK.

In the UK, the Research Council on Complementary Medicine (RCCM) was founded in 1983 by a group of practitioners and researchers from both orthodox medicine and CAM. That group’s aim was to develop and extend the evidence base for complementary medicine to provide practitioners and their patients with information about the effectiveness of individual therapies and the treatment of specific conditions. Although several studies

argue that the popularity of CAM use is growing in the UK, current provision within the National Health Service is limited (Hollinghurst, Shaw, & Thompson, 2008; Maha & Shaw, 2007). Several studies estimate that in the UK, 90 percent of the provision of CAM services is outside the National Health Service (Thomas, Nicholl, & Coleman, 2001; Thomas & Coleman, 2004).

Although most experts would now agree CAM is no longer categorized as treatments that are only on the fringe of society or treatments that are viewed as deviant, a common, accepted definition eludes researchers. Traditionally, CAM is defined as “any systems of medical diagnosis or treatment differing from that used by allopathic practitioners for the treatment of disease and injury” (Kim & Chan, 2004, p. 322). Most typically, CAM refers to health treatments and products that are different from the culturally dominant Western medicine, such that they are not taught in medical school or not available in hospitals (Barrett et al., 2003; Conboy et al., 2005; Meeker, 2000; Ni, Simile, & Hardy, 2002).

However, some argue that the definition of CAM is fluid, inconsistent, and unclear (Meeker, 2000; Ni et al., 2002). Information about CAM is increasingly included in the curricula in medical schools, blurring the distinction between conventional medicine and CAM (Coulter & Willis, 2004; Tilden, Drach, & Wolle, 2004). In Great Britain, the British Medical Association has argued that CAM education should be a part of the education of both medical students and other health professions (British Medical Association, 1993). Furthermore, the all-encompassing definition of CAM, which includes very specific therapies such as reflexology and at the same time whole medical systems such as Traditional Chinese Medicine, reduces the applicability as a definition (Coulter & Willis, 2004). Although challenges in creating a definition of CAM have been noted, Hirschhorn (2006) brings into light that most definitions do not move beyond defining CAM as something different from the traditional Western biomedical model of illness. More expansive definitions of CAM speak to the underlying modes of thinking about illness, disease, health, and treatment. The traditional Western biomedical model is associated with “reductionism and materialism,” whereas CAM is equated with “holism and vitalism” (Hirschhorn, 2006, p. 545). Holism is the belief that the mind, body, and spirit are interconnected (Northcott, 1994), and vitalism is the belief that all living organisms have nonmaterial energy (Hirschhorn, 2006).

Regardless of the definition, CAM includes very diverse types of health treatments which are used for both preventative and curative reasons (Bell et al., 2006; Ni et al., 2002). A very wide range of epistemologies and

practices are included at some points under CAM. CAM treatments can be a one-shot situation or continuous treatment. It can involve contact with a practitioner, or actions taken through materials available in drug or grocery stores or on one's own. CAM therapies can also be thought of as those "derived from various ethnic traditions (such as Chinese traditional medicine...), various understandings of health and wellness (such as herbal remedies...), as well as those whose origins lie in alternative approaches to scientific reasoning (such as homeopathy...)" (Thorne, Paterson, Russell, & Schultz, 2002, p. 672). Regardless of the definition or the categorization, if these health treatments are used along with conventional medicine, a therapy is said to be "complementary." If used instead of conventional medicine, it is termed "alternative" (Barrett et al., 2003).

Overall, it is very difficult to come up with one clear, consistent definition of CAM. Even the terms vary. Although many places now use CAM as a general term, such terms as alternative medicine, natural medicine, holistic healing, and integrative medicine have all been used at various times. When one compares across countries, there is even more variability, and that variability becomes a more complex issue as researchers try to discuss and research types of CAM and ways to categorize CAM.

TYPES OF CAM AND WAYS TO CATEGORIZE CAM

In an attempt to categorize types of CAM, in 2000, The House of Lords Select Committee on Science and Technology recommended that in the UK, CAM be categorized into three groups. Group 1 is the Professionally Organised Alternative Therapies which includes modalities such as chiropractic and acupuncture. Group 2, Complementary Therapies, includes meditation, massage, and spiritual healing while Group 3, Alternative Disciplines, includes Traditional Chinese medicine and naturopathy (House of Lords, 2000). "Their report is the most important policy document about CAM produces in the UK" so much so that Stone and Katz (2005) argue that "outside the UK there is very little consistency in classification of CAM" (p. 48).

Unlike in the UK, there has been no national policy regarding CAM in the US. There is, however, a dominant authority in the US on defining and categorizing CAM. The United State's National Center for Complementary and Alternative Medicine (NCCAM) defines CAM as those medical treatments and practices that are not considered part of conventional medicine (National Center for Complementary and Alternative Medicine,

2007). NCCAM was instrumental in developing the supplemental section of the 2002 National Health Interview Survey (NHIS) in which 27 types of CAM therapies commonly used in the US were included (Barnes, Powell-Griner, McFann, & Nahin, 2004). NCCAM has chosen to categorize types of CAM into five domains: (1) whole medical systems, (2) mind-body medicine, (3) biologically based treatments, (4) manipulative and body-based practices, and (5) energy medicine. Whole medical systems include the categories of acupuncture, Ayurveda, naturopathy, and homeopathy. Mind-body medicine includes meditation, relaxation, yoga, and prayer. Biologically based treatments include vitamins, herbs, diets, and folk medicine. Energy medicine is energy healing therapies and Reiki (National Center for Complementary and Alternative Medicine, 2007).

Within the US, limitations have been discussed about the NCCAM domains being created in such a way that there is a need to assign some CAMs to more than one domain (Shumay, Gertraud, Gotay, Heiby, & Kakai, 2002). One technique for addressing this limitation is making a judgment call on where to place each specific type of CAM. For examples, Qi Gong, which NCCAM recognizes as an energy healing therapy, was also closely related to yoga and Tai Chi and would be more similar to traditional Chinese medicine or herbal medicine in the British classification. Some US researchers have placed Qi Gong in Mind-Body Therapies, which is more similar to a British approach (Barnes et al., 2004; Bell et al., 2006; Grzywacz et al., 2005; Grzywacz et al., 2006a, 2006b) Another way of solving this limitation is assigning the same type of CAM to two different domains, potentially over inflating prevalence rates. For instance, using Chinese herbs has been assigned to alternative medical systems and biologically based treatments (Shumay et al., 2002).

A second limitation of the NCCAM domains is the inclusion of prayer within mind-body medicine. Research has found that there are differences between those who use prayer and those who use other mind-body medicines (Eisenberg et al., 1993, 1998; Grzywacz et al., 2007; McCaffrey, Eisenberg, Legedza, Davis, & Phillips, 2004; Tindle, Davis, Phillips, & Eisenberg, 2005). Therefore, in some previous CAM research articles, prayer is created as a sixth domain with significant results obtained (Grzywacz et al., 2007; McCaffrey et al., 2004). Within Great Britain, prayer is included as a component of spiritual healing and categorized in Group 2, according to the House of Lords (2000). Shumay et al. (2002) concluded, "The NCCAM domain system is one possibility. However, this system may still need to be amended to reflect a more logical grouping of CAMs, with less definitional overlap between categories" (p. 669).

In some of our own recent work, we conducted a multifaceted examination of previous CAM domains and tested if they represent actual patterns of CAM use (Ayers & Kronenfeld, 2009). The data came from the 2002 NHIS and included 30,923 adults. Outcome measures included 20 types of CAM used in the last 12 months. Both exploratory and confirmatory factor analyses were used. In testing previous CAM domains, as suggested by NCCAM, the overall model fit was poor but a revised model fit these data well. The revised model indicates that prayer should be created as a new domain apart from Mind-Body Medicine, as suspected by previous researchers (Eisenberg et al., 1993, 1998; Grzywacz et al., 2007; McCaffrey et al., 2004; Tindle et al., 2005). Herbs and vitamins fit best with Alternative Medical Systems while acupuncture best fits with chiropractic and massage. These findings suggest that how types of CAM have been previously categorized in earlier research is inconsistent with actual patterns of CAM utilization, which echoes the complexity in defining and researching CAM (Ayers & Kronenfeld, 2009).

USE OF CAM

The literature about who uses CAM, the types of CAM they use, and social factors that impact use is extensive. This chapter will briefly review the literature on social factors and use of CAM, looking at such factors as age, gender, socioeconomic status, race/ethnicity and immigration status, and health status. One issue that reappears is the differing and conflicting findings with some social factors. One reason for this is that many studies of CAM utilization are small, local studies that typically focus on one particular type of CAM use or one particular type of health problem (Foote-Ardah, 2003; Calnan, Wainwright, O'Neill, Winterbottom, & Watkins, 2007).

Age

Research findings are contradictory when examining the relationship between age and use of CAM. For instance, being younger has been associated with using more CAM (Boon et al., 2000; Kelner & Wellman, 1997), which “might reflect generational differences in knowledge and acceptance of these CAM practices” (Chan et al., 2005, p. 1226). This generational difference can be found in the rise of marketing strategies on the Internet that advocate using CAM for self-management of health and

thus promotes the social view that CAM is appropriate for treating health problems (Leventhal, Halm, Horowitz, Leventhal, & Ozakinci, 2004; Morris & Avorn, 2003).

Conversely, other studies have found that older individuals use CAM more (Grzywacz et al., 2006a, 2006b; Krastins, Ristinen, Cimino, & Mamtani, 1998). For example, Grzywacz et al. (2006a, 2006b) found that the elderly are more likely to use home remedies due to a lack of availability of conventional medical care, lack of financial resources to pay for conventional medical care, and the high prevalence of chronic conditions.

Still other studies have found that the relationship between age and utilization of CAM is curvilinear such that middle-aged individuals are more likely to use CAM (Astin, 1998; Bausell, Lee, & Berman, 2001; Conboy et al., 2005; Eisenberg et al., 1993, 1998; Grzywacz et al., 2005). In the UK, a similar age pattern of lower use by younger and older individuals has been reported (Thomas & Coleman, 2004). This curvilinear association between age and CAM use persists across different types of CAM use in the US. Grzywacz et al. (2005) argue this is because most individual CAM modalities gained greater popularity in the late 1960s through the 1970s, when current midlife adults were middle to late adolescents.

Gender

In contrast with mixed findings by age, most studies report that women are more likely to use CAM than men (Bausell et al., 2001; Boon et al., 2000; Conboy et al., 2005; Eisenberg et al., 1998; Kelner & Wellman, 1997). Specifically, estimates for the prevalence of use in women range anywhere from 10.8% to 76% (Newton, Buist, Keenan, Andersen, & LaCroix, 2002) with the greatest use being women in midlife (Bair et al., 2005). The relationship between gender and CAM use is consistent across various CAM modalities (Conboy et al., 2005); however, women are “more likely to use therapies that they can procure themselves and are less likely to seek the assistance of a CAM practitioner” (Cherrington et al., 2003, p. 80). It is theorized that the relationship is so strong and consistent for women because of women’s greater involvement in self-care and self-treatment due to their greater longevity, caregiving responsibilities, interest in prevention of illness, health knowledge, and health concerns (Conboy et al., 2005; George, 2001). In contrast, data from the UK has shown less consistency, with some studies reporting that women use more CAM (Thomas et al.,

2001) and others reporting no differences in rates of use for men and women (Thomas & Coleman, 2004).

Socioeconomic Status (Education and Income)

Education is positively related to using alternative medicine, and in many studies, the majority of CAM users have at least some college education (Arcury et al., 2007; Astin, 1998; Bell et al., 2006; Chan et al., 2005; Cherrington et al., 2003; Conboy et al., 2005; Eisenberg et al., 1993, 1998; Gaumer & Gemmen, 2006; Goldstein et al., 2005; Keith, Kronenfeld, Rivers, & Liang, 2005; Patterson et al., 2002; Tilden et al., 2004). Specifically, only 31% of those with a high school diploma use alternative medicine as compared to 50% of those with graduate degrees (Astin, 1998). In the UK, there is a positive association between CAM use and education, with education measured as the age of leaving full-time education (Thomas & Coleman, 2004).

Because the relationship between education and CAM use is so pervasive, Astin (1998) posits several possible explanations. He suggests that as education increases, so too does the likelihood that people will have some exposure to CAM through their own reading of popular or academic books on the subject as well as through educating themselves about illness and its treatment.

Income, however, has not been shown to be a consistent predictor in using CAM. Some studies found that income is not significantly related to using CAM (Arcury et al., 2007; Astin, 1998), whereas other studies have found income to have a positive relationship with CAM use (Bair et al., 2005; Eisenberg et al., 1998; Cherrington et al., 2003; Conboy et al., 2005; Goldstein et al., 2005). In the UK, recent studies have found a positive relationship between income and use of CAM (Thomas & Coleman, 2004). One explanation given for no relationship between income and use of CAM is that people using CAM may not spend much money on the treatment, and therefore, costs do not act as a barrier. In the US, estimates for the cost of alternative medicine range from \$68 to \$330 per year (Mikhail, Wali, & Ziment, 2004). For studies that find a positive relationship between income and use of CAM, those with incomes greater than \$50,000 had the greatest CAM use (Conboy et al., 2005). One argument in these cases is that wealthier people have both more income and more disposable income to engage in alternative health-related activities (Bair et al., 2005).

Race/Ethnicity and Immigration Status

CAM research has often focused on racial and ethnic differences in CAM use. One common thread is to examine racial/ethnic-specific CAM by using types of CAM that are particularly congruent with a racial/ethnic group's cultural identity (Hsiao et al., 2006). Because the meanings and specificity of race/ethnicity categories vary in different countries, and because this aspect of utilization has received much greater attention in the US, this section focuses on research in the US. By examining racial/ethnic-specific CAM, researchers can understand which CAM modality is of the greatest importance to each group. Findings examining racial/ethnic-specific CAM use suggest that for each racial/ethnic group within the US, there is one predominant type of CAM; however, the exact predominant type varies depending on the research study. For example, Hispanics' predominant type is curandero use (Hsiao et al., 2006), homeopathy (Xu & Farrell, 2007), or prayer (Goldstein et al., 2005). These differences could be due to different measurements of CAM or different sample sizes; 16 CAM types and 9187 California respondents (Hsiao et al., 2006); 11 CAM types and 46,673 US respondents (Xu & Farrell, 2007); 11 CAM types of 9187 California respondents (Goldstein et al., 2005).

For African Americans, prayer and faith are an important part of use of CAM. Approximately 62% of African Americans use prayer and faith as an integral part of healing, treating illnesses, and coping in times of stress (Abrums, 2000; Ang, Ibrahim, Burant, Siminoff, & Kwok, 2002; Conboy et al., 2005; Mansfield, Mitchell, & King, 2002). The belief in the healing power of prayer is stronger and more highly valued for African Americans than any other ethnic group (Barnes et al., 2004; Rice, 2005). This strong belief in prayer and faith can be "traced back to the era of slavery in the southern US when adaptation of Christianity provided a new basis for social cohesion in an alien environment" and has produced the "formation of black consciousness, black culture, and black community" (Mansfield et al., 2002, p. 400). Another reason for this strong relationship is the attribution of sickness to sin (Abrums, 2000). A third reason is the historical, medical discrimination and racism against African Americans, which has produced fear and mistrust of the conventional medical system, specifically about physicians' motives and interests (Abrums, 2000; Rice, 2005).

Hispanics use more herbs, homeopathy, massage, and prayer than non-Hispanic Whites (Conboy et al., 2005; Mikhail et al., 2004). Within Hispanic communities, what type of herb to use and the purpose of that herb are well known (Mikhail et al., 2004). As with African Americans, religious beliefs

play an integral role for Hispanics in disease etiology and management (Mikhail et al., 2004). In a survey of Hispanics with diabetes in New York, 78% reported it was God's will that they had diabetes, 81% reported that only God could manage their diabetes, and 55% reported that their religious leader, most likely their priest, had been an integral part in helping them control their diabetes (Zaldivar & Smolowitz, 1994).

Hispanics have culturally appropriate alternative medicine practitioners, *curanderismos*, *santeria*, and *espiritismo* (Gomez-Beloz & Chavez, 2001). These practitioners "assess the patient and, depending on diagnosis, prepare a healing remedy or a variety of healing remedies. A remedy is any combination of medicinal herbs [and/or] religious amulets" (Gomez-Beloz & Chavez, 2001, p. 537). Once the individual is given the healing remedy, he or she will go to the *botanica* to buy the recommended herbs or amulets. Gomez-Beloz and Chavez (2001) note that *botanicas* can be found in almost all Hispanic neighborhoods in the US. Within the *botanica*, the individual can purchase a small and more affordable amount of the remedy, which does not require a medical prescription (Gomez-Beloz & Chavez, 2001).

Asian Americans report they use Western medicine for acute illnesses and for those that are viral in origin and use CAM for minor, routine, and chronic health problems (Lee, Fincke, & Ren, 2000; Lim & Bishop, 2000; Rawl, 1992). However, after consulting Western medical physicians for acute illnesses, many (42%) will then use traditional Chinese medicine. Asian Americans use more acupuncture, naturopathy, and homeopathy than White non-Hispanics (Conboy et al., 2005; Hsiao et al., 2006). This has been attributed to cultural beliefs around illness: yin and yang, *qi*, and the belief that some illnesses are spiritual in nature.

Specifically, the Chinese culture regards the body more holistically and views health as part of a set of dynamic processes (Rawl, 1992). These views of illness are different than Western medicine views, which traditionally separate mind and body (Lim & Bishop, 2000; Rawl, 1992; Rice, 2005). This separation may lead to dissatisfaction with Western medical care; however, an increase in satisfaction with conventional medical care was not associated with a decrease in CAM use. Conversely, a decrease in satisfaction with conventional care was not associated with an increase in CAM use (Ahn et al., 2006). This indicates that "CAM therapy use may be a product of embedded, pervasive cultural values" rather than other factors such as generational status, sociodemographic differences, or satisfaction with conventional medicine (Ahn et al., 2006, p. 652).

In addition to issues of race/ethnicity, issues of immigrant status are important and a crosscutting issue in some ways in the US. Studies that have

examined immigration variables have reported inconsistent findings and tended to have small sample sizes. Several researchers have examined the association between Hispanics, immigration, and CAM utilization with mixed findings. Kuo, Hawley, Weiss, Balkrishnan, and Volk (2004) examined 322 individuals living in Houston, Texas, and found that those who had no immigrant family history were more likely to use herbs than individuals with an immigrant family history. Conversely, Poss and Jezewski (2002) noted that more acculturated Mexican Americans living in El Paso, Texas, were less likely to use herbs and other home remedies. Mikhail et al. (2004) conducted a small study of 107 Hispanics and found that Hispanics born in the US had the lowest percentage of using CAM.

Another line of immigration and acculturation research has focused on Asian Americans, with inconsistent findings as well. Kim and Chan (2004) examined 143 Korean Americans who had visited a CAM practitioner. More acculturated Korean Americans were significantly more likely to use CAM; however, the length of residence in the US was negatively associated with use of CAM. Leong, Pong, and Chan (2003) surveyed 192 Chinese patients in a Rheumatology Clinic and found that those who spoke Chinese as their first language did not use traditional Chinese Medicine more than those who spoke English as their first language.

Of importance, three studies have had larger sample sizes available to examine immigrant variation in use of CAM in the US. Tindle et al. (2005) used the NHIS with 31,044 respondents to examine the relationship of US citizenship status to CAM utilization. US citizens were significantly more likely to use any CAM than non-citizens (Tindle et al., 2005). Ahn et al. (2006) surveyed 3,258 Chinese and Vietnamese Americans and noted that “factors that may serve as markers of acculturation, such as proficiency with the English language, years in the US, and age were not associated with decreased CAM therapy use” (p. 652); however, only Chinese and Vietnamese Americans who had visited a community health center in the past 30 days were examined (Ahn et al., 2006). Hsiao et al. (2006) examined 1,203 Asians who used Asian-specific CAMs (e.g., acupuncturist, traditional Chinese Medicine, Green tea, and Soy products). Asians who were not proficient in English used more Asian-specific CAM than those Asians who spoke only English; however, length of time as a US resident was not significant. Conversely, Latinos who spoke English used more Latino-specific CAM than Latinos who spoke Spanish, while length of time in the US was not significant (Hsiao et al., 2006). These studies indicate the contradictory and inconsistent findings when examining immigrant status and utilization of CAM in the US.

Health Status

Having poorer overall health is significantly related to using more alternative medicine (Astin, 1998; Bausell et al., 2001). As health status decreases, use of CAM increases (Astin, 1998). Specifically, those individuals who use CAM are twice as likely to have poorer self-reported health. There is also a consistent positive relationship between having a chronic condition, such as arthritis, diabetes, HIV, cancer, and chronic pain, and using CAM (Astin, 1998; Thorne et al., 2002). It is estimated that between 75% and 85% of individuals with chronic illnesses have used CAM (Bell et al., 2006; Thorne et al., 2002). Having chronic pain is also associated with higher use of CAM (Ong, Petersen, Bodeker, & Stewart-Brown, 2002). Because effective treatment for chronic pain remains elusive (Turk & Burwinkle, 2005), having chronic pain was the most important predictor for using CAM (Ong et al., 2002).

There are two different explanations for the strong and consistent relationship between poor health status, chronic illness, pain, and utilization of CAM. First, individuals with chronic conditions use CAM to treat their chronic conditions because conventional Western medicine often cannot cure their chronic illness (Arcury et al., 2007; Eisenberg et al., 1993; Thorne et al., 2002). When no cure is available, people are “challenged with the ongoing process of self-care management so that they may live their lives as well as possible” and will seek out CAM therapies (Thorne et al., 2002, p. 672). Second, a large number of individuals in poor health status, having chronic illnesses, and in chronic pain are more likely to be somatizers, such that they report physical symptoms for which there are no pathophysiological explanations (Astin, 1998). Because these individuals do not receive a diagnosis from their physician, they may be more likely to seek out other forms of diagnosis and treatment (Astin, 1998).

INTEGRATION OF CAM AND CONVENTIONAL CARE

Some research has examined the connection between using conventional medicine and using CAM, but findings are mixed. Some research has found a negative association between use of CAM and use of conventional medicine. There are two distinct theories relating to this negative association. First, those who use CAM are less likely to use conventional medicine, and second, those who use conventional medicine are less likely to use CAM (Ang et al., 2002; Barrett et al., 2000).

Some research supports the view that those who use CAM are less likely to use conventional medicine. Individuals may use CAM instead of using conventional physicians because of the high costs associated with conventional medicine. Specifically, in the US, the costs of medical care and health insurance premiums are rising rapidly, making conventional medical care less affordable (Pagan & Pauly, 2005). Individuals who report they delayed receiving conventional medical care due to costs are 61% more likely to use CAM (Pagan & Pauly, 2005). Those who have delayed receiving conventional medical care are more likely to pray, use herbs, use relaxation techniques, chiropractic care, homeopathy, acupuncture, naturopathy, and folk medicine (Pagan & Pauly, 2005). Second, some CAM therapies such as traditional Chinese medicine, homeopathy, and naturopathy “compete with, provide an alternative to, or complement the more conventional forms of medicine available in hospitals and licensed physicians’ offices” (Barrett, Marchand, Scheder, & Appelbaum, 2000, p. 234). Third, individuals feel Western medicine is too authoritative and disempowering, and patients feel that the physician is paternalistic, disparaging, condescending, or chauvinistic while alternative medical practitioners are viewed in a more positive light as having a greater focus on facilitating health outcomes (Barrett et al., 2000). Fourth, conventional health care access is not equitable, specifically for racial and ethnic minorities. Using CAM may explain some of the racial and ethnic disparities in utilization of conventional medicine in the US (Ang et al., 2002). Racial and ethnic minorities are more likely to live in areas with fewer primary care physicians, are more likely to lack the resources (e.g. health insurance and income) that would grant them access into the conventional health care system, and are more likely to have more chronic illnesses (Grzywacz et al., 2006a, 2006b; Pagan & Pauly, 2005). Because of this, racial and ethnic minorities must rely heavily on alternative medicines because conventional medical care is not available (Grzywacz et al., 2006a, 2006b).

The second finding relating to the negative association between CAM and conventional care utilization is that those who use conventional medicine are less likely to use CAM (Barrett et al., 2000, 2003; Cheng, Lee, Li, Dennehy, & Tsourounis, 2004). Asian Americans living in Oakland and San Francisco Chinatowns were more likely to visit a Western physician than a traditional Chinese doctor (Cheng et al., 2004). One explanation is that conventional medicine is accessible, both through health insurance coverage and geographic location, whereas CAM practitioners are more difficult to locate, leading to greater out-of-pocket expenses (Barrett et al., 2000, 2003; Cheng et al., 2004).

In contrast to the studies just reviewed, some research has found a positive association with using both forms of medical treatments such that higher

CAM use is associated with higher conventional medicine use (Astin, 1998; Bair et al., 2005; Barrett et al., 2000; Bausell et al., 2001; Cherrington et al., 2003; Druss & Rosenheck, 1999; Eisenberg et al., 1998; Mikhail et al., 2004; Ong et al., 2002). In fact, research shows that the heaviest CAM users are also the heaviest conventional care users (Caban & Walker, 2006; Druss & Rosenheck, 1999). Conversely, those who did not use any conventional medicine were also less likely to use CAM therapies (Caban & Walker, 2006). It is estimated that of individuals who used CAM, between 75% and 83% also used conventional medicine (Druss & Rosenheck, 1999; Eisenberg et al., 1993). The annual number of visits to CAM practitioners (628 million) exceeds annual visits to conventional medical practitioners (427 million); however, more individuals see a conventional medical practitioner annually (Druss & Rosenheck, 1999; Eisenberg et al., 1998). This contradiction can be explained through frequency of visits, such that the average number of visits is higher for CAM treatments than for conventional medical treatments (Barrett, 2003).

These figures suggest that CAM users do not abandon conventional Western medicine, but rather use CAM more in a complementary fashion and not as a replacement for conventional medicine (Barrett et al., 2003; Kessler et al., 2001). This illustrates that people do not feel that they have to choose between conventional or alternative medicine, but can combine them (Fadlon, 2005). This concept supports the idea of medical pluralism: "People frequently adopt multiple healing practices even when biomedicine is generally available" (Kaptchuk & Eisenberg, 2001, p. 189). Specifically, individuals will choose the appropriate healing practice for the specific kind of problem and do not make dichotomous choices in relation to health care (Kelner & Wellman, 1997). Individuals "may reject specific medical treatments, such as certain medications, but retain a meaningful involvement with the conventional health care system" (Thorne et al., 2002, p. 675). Hispanics who used prayer for healing viewed prayer as a supplement to receiving conventional health care (Mikhail et al., 2004). Individuals with chronic illnesses also exhibit medical pluralism (Ong et al., 2002).

There are several reasons for the positive connection. First is simply that individuals appreciate and value conventional medicine (Barrett et al., 2000). Second, "the underlying factors such as threatened health status and perceived need are predictive of recourse to both conventional and unconventional care" (Barrett et al., 2003, p. 418). Third, utilizing the combination of conventional and alternative medicine allows individuals to mix and match therapies to suit individual needs and create an integrated solution (Barrett et al., 2003). Fourth, some conventional physicians

recommend CAM therapies which makes individuals, specifically non-Hispanic Whites, more likely to utilize CAM (Kakai, Maskarinec, Shumay, Tatsumura, & Tasaki, 2003).

Many studies have examined how dissatisfaction with conventional Western medicine impacts utilization of CAM. There have traditionally been two foci of dissatisfaction research: (1) dissatisfaction with a particular medical treatment or medical outcomes (Fadlon, 2005; McGregor & Peay, 1996; Sirois & Gick, 2002; Sutherland & Verhoef, 1994); and (2) dissatisfaction with conventional practitioners or dissatisfaction with the medical encounter (Bishop, Yardley, & Lewith, 2006; McGregor & Peay, 1996).

When examining dissatisfaction with a particular medical treatment, researchers argue that people are more likely to use CAM because conventional medical treatments have unpleasant side effects or are ineffective for their health problems (Sirois & Gick, 2002; Sutherland & Verhoef, 1994). These negative side effects of conventional medical treatments will push individuals into CAM therapies out of desperation to find an effective treatment (McGregor & Peay, 1996).

Dissatisfaction with conventional practitioners is the second explanation. In this view, patients seek and use CAM because they are disgruntled with their physician due to the impersonal nature of conventional Western medicine (Bishop et al., 2006; Furnham & Smith, 1988; Siahpush, 1999). Specifically, people who use homeopathy are more likely to be less satisfied on their most recent visit to their general practitioner (GP), feel their GP is less concerned with their well-being and listens to them less (Bishop et al., 2006). Siahpush (1999) and Furnham and Smith (1988) found that people turn toward CAM because of bad experiences and encounters with their physician. Conversely, Keith et al. (2005) found that individuals who use CAM are not dissatisfied with their conventional medical provider. In fact, compared to those individuals who were not satisfied with the quality of care delivered by their conventional medical provider, those who were very satisfied with the quality of care used almost twice as much CAM (Keith et al., 2005). "Our findings suggest that when Americans turn to CAM it has more to do with being dissatisfied with aspects of the general healthcare system rather than with their specific provider" (Keith et al., 2005, p. 30).

Researchers have conversely pointed out that dissatisfaction with conventional care is not a strong predictor of CAM use (Astin, 1998; Spigelblatt, Laine-Ammara, Pless, & Guyver, 1994). "Despite the fact that overall levels of trust and confidence in medical care have declined since the 1960s ... the single [United States] national study of CAM that addressed this concern found no relationship (i.e. Astin, 1998)" (Goldstein, 2002,

pp. 45–46). It appears that patients use CAM to augment their conventional medical care instead of being pushed toward using CAM out of dissatisfaction (Spigelblatt et al., 1994). Having negative experiences with, being distrustful of, or having dissatisfaction with conventional medicine is not associated with CAM use (Astin, 1998). Those that were satisfied with their conventional care used CAM at roughly the same percent as those that were dissatisfied (39% vs. 40%) (Astin, 1998).

Given this weak association between dissatisfaction and CAM utilization, Goldstein (2002) speculates that dissatisfaction should also encompass access issues, such as the structure and nature of managed care, as well as cost issues, such as the rising costs of health care. Patients may turn to CAM if their health care system offers fewer choices about where they can go for services and requires various types of forms and prior authorizations. These factors affecting dissatisfaction have rarely been examined and are all but “absent from the CAM literature” (Pagan & Pauly, 2005, p. 256). In those studies that have examined cost and access issues, the measures are single indicator general questions. For example, Keith et al. (2005) found no difference in the ability to access care or difficulty in getting care and utilizing CAM; however, these were single indicator items. Lee et al. found that individuals dissatisfied with waiting times for conventional medicine were more likely to use CAM. Pagan and Pauly (2005) found that adults who did not get or delayed medical care due to cost were more likely to use CAM. The authors posit “the observed increases in CAM use associated with the lack of access to medical care suggest that some patients are looking for lower-cost care and not necessarily for equally costly alternatives that better serve their real or perceived needs” (Pagan & Pauly, 2005, p. 260).

FUTURE CAM RESEARCH: BEYOND SOCIAL DIFFERENCES IN USE

What is the future of research on CAM and what are the most important questions for future research? Although within the biomedical community, many would argue that the most important questions are efficacy of treatments (Bausell, 2008), for social science research, the more interesting questions, sociologically, may be linkages between CAM and other growing interests in health and wellness and how this ties into patterns of social differences in use of CAM. Certainly, many aspects of growth in CAM are linked to the role of the consumer in health care and growing consumerism.

This is not always a simple case of people wanting more, however. As this review of social factors that link to utilization shows, at times the consumer-driven aspect of CAM may link to greater acceptance of aspects specific to the patient's own life (such as issues of culture, class, and race/ethnicity) or tie into issues of individual responsibility for health (McClean, 2005) or contribute to subjective assessments of a sense of well-being (Sointu, 2006). CAM may also link to a desire to control aspects of the doctor-patient relationship, due to managed care in the US and to growing patterns of doctors spending less time with patients and using physician extenders such as nurse practitioners and physicians' assistants to be the contact with patients at many times. In the British NHS system, use of CAM may be a reaction to waiting times and some growing bureaucratization of care within that system. As with the breast cancer patients studied by Sered and Agigian (2008), CAM usage may be part of broader and more complex etiological frameworks that help patients to feel like individuals, not cogs in an established medical protocol. This would fit with research showing that dissatisfaction with one's own care is not a strong predictor of CAM use, and, often, it is dissatisfaction with the overall care system, not a particular doctor, which leads a patient to explore CAM. In addition, other studies have also reported that while some patients chose a particular CAM modality because of their belief in it and its principles, many choose CAM because of desperation (regular therapy is not working) and due to referrals from family and friends (Kelner & Wellman, 1997; O'Conner, 2002).

In addition, there are clearly aspects of the commercialization of CAM and its linkage to health and wellness. In the last twenty years in the US, there has been a growth of herbal medicines available in many settings (pharmacies, grocery stores, special stores that focus on herbal over-the-counter medicines). Additionally, there has been an increase in special massages that are partially a form of CAM and partially a form of luxury and "pampering oneself." These two areas clearly illustrate the commercial aspects of CAM. A recent study of CAM users in southern England found that some types of CAM are viewed more as personal luxuries, rather than as a form of medical treatment (Bishop et al., 2008). In these cases, the lines between beauty treatments, treatments to make someone relax, and treatments with a therapeutic impact are blurred, leading to greater commercialization of care. The blurring also occurs in other ways within the US. Some conventional physicians now encourage patients to take vitamins and other supplements and may even have a line of such products that they make available for purchase in their offices. Although this is often stressed as a convenience for busy patients, it also blurs the line between medicine and commerce.

However, just to focus on this aspect of CAM is an oversimplification of other parts of CAM. In some ways, CAM is “beauty in the eye of the beholder,” and CAM can mean many different things to different people. As social scientists, we need to be able to understand why people use CAM with the consideration that it can be for many different reasons and not simply that CAM has been commercialized. For example, racial and ethnic minorities could be using CAM because of their cultural beliefs surrounding health and illness. Individuals with chronic conditions could be using CAM because of the ineffectiveness of conventional Western medicine. Understanding the why’s of CAM utilization and not simply the prevalence rates will give social scientist a needed framework to extend CAM knowledge beyond simply who uses CAM. The linkages between CAM and conventional medicine are growing. Between 75% and 85% of CAM users also used conventional medicine (Druss & Rosenheck, 1999; Eisenberg et al., 1993). In fact, research shows that the heaviest CAM users are also the heaviest conventional care users (Caban & Walker, 2006; Druss & Rosenheck, 1999). CAM users do not abandon conventional Western medicine, but rather use CAM more in a complementary fashion and not as a replacement for conventional medicine (Barrett et al., 2003; Kessler et al., 2001). In the future, CAM may be seen as one among an array of choices of therapies and practitioners. For social scientists, having a better understanding of why people make choices among types of CAM and between CAM and conventional care may enrich our understanding of how people think about health, illness, and care seeking.

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RACIAL AND SOCIOECONOMIC DISPARITIES IN USE OF LONG-LASTING CONTRACEPTION

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ABSTRACT

Data from the National Survey of Family Growth suggest that poor women and women of color are more likely than privileged women to use long-lasting contraception such as sterilization, intrauterine devices (IUD), and Depo Provera. This disparity is noteworthy because long-lasting methods can and have been used coercively. To analyze this disparity, I constructed multivariate binary logistic regression models for female sterilization, IUD, and Depo Provera using the most recent National Survey of Family Growth available (Cycle 6, conducted by the National Center for Health Statistics (NCHS) in 2002). I examined the effect of both personal factors, including age, parity, and number of marriages, and social factors, including education and health coverage. Personal factors were strong predictors but could not explain racial and economic disparities that exist among contraceptive users. This analysis found that education and health coverage were also important variables. Even controlling for personal factors, women with less education were more likely to be sterilized or use Depo Provera than women with a

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 109–134
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027008**

bachelor's degree or more. Women covered by Medicaid or public, government, or military coverage were more likely to use Depo Provera than women with private insurance. Women covered by Medicaid were also more likely to be sterilized since 2000. And uninsured women were more likely to use an IUD than women with private health insurance. However, none of the independent variables completely erased the effect of race and income, suggesting further research is necessary to understand the disparity in use of long-lasting contraceptives.

INTRODUCTION

Data from the 2002 National Survey of Family Growth suggest class- and race-based disparities exist among contraceptive users. In general, African American and Hispanic women and those with lower incomes are more likely to rely on long-lasting, female-oriented methods including female sterilization, intrauterine devices (IUD), and Depo Provera (the shot). On the other hand, white women and those with higher incomes are more likely to use vasectomy and short-term methods including oral contraception (the pill), fertility awareness methods (aka Natural Family Planning), and barrier methods.

This disparity is noteworthy because long-lasting methods have the potential to take control out of women's hands. They require a medical practitioner to insert/inject them and have long-lasting effects (from 3 months to permanent). Women are then dependent on a medical practitioner (for all but Depo Provera) to remove the device or reverse the procedure. In addition, these methods are associated with severe side effects and alter women's reproductive anatomy and physiology (e.g., Haider & Darney, 2007).

On the contrary, short-term methods require little or no contact with medical practitioners and allow users daily control. And most short-term methods have few or no side effects. Though the pill has side effects and requires a yearly visit to the doctor, women can choose to take it (or not) on a daily basis. And from the woman's perspective, male sterilization does not alter or control her body at all.

Thus, women from disadvantaged groups tend to use methods that have graver side effects and require more interaction with and dependence on medical practitioners. They are also less likely to use vasectomy, which shares the responsibility and burden of birth control with their male

partners. But, why are women from disadvantaged groups more likely to use these long-lasting methods than privileged women?

Several personal factors such as number of children (parity), marital status (Goldstuck, 1989; Godecker, Thompson, & Bumpass, 2001) and cultural ideas regarding motherhood, sexuality, and relationships (Ortiz & Casas, 1990; Rivera, Méndez, Gueye, & Bachmann, 2007) have been shown to predict contraceptive use. However, prior research also suggests two important social factors could be at play. First, women and racial minorities are particularly apt to experience the socially controlling effects of medicalization, including social policies that have enforced or encouraged use of long-lasting contraception. A key reason for this might be their lack of important cultural capital. Second, disparities in access to reproductive health coverage and costs of birth control methods may limit women's choices.

Medicalization and Social Control

The concern that medicalization leads to unwarranted social control has been consistently voiced for over three decades (e.g., Zola, 1972; Kotarba, 1984; Conrad, 1992). Feminist researchers have emphasized that medicalization is patriarchal in nature. Male medical professionals ascended primarily by marginalizing and criminalizing traditional female healers (Ehrenreich & English, 1973), and women's bodies tend to be scrutinized more than men's (Riessman, 1983). Low-income earners and racial minorities have also been particularly vulnerable to the socially controlling effects of medicalization, serving as test subjects for dangerous experiments (e.g., Jones, 1993), and regularly being labeled as "careless" or "noncompliant" (Lerner, 1997), for example.

Coercive Laws and Policies

Of particular concern to many researchers are coercive policies designed to control the reproductive capability of women and people of color. The eugenics movement sterilized more than 60,000 Americans labeled unworthy to reproduce between the early 1900s–1960s (Reilly, 1991). While mental capacity or "feeble-mindedness" was central to the eugenics rhetoric, the movement was largely about gender and race. Men constituted only one-third of those sterilized and were generally sterilized to control criminal behavior. On the contrary, because illegitimacy, the genetic health of children, and social ills, such as poverty, were attributed to women's

reproductive capacity, eugenicists contended that “unfit” women should give up childbearing as a patriotic duty (Carey, 1998). And arguments of feeble-mindedness had racial underpinnings because “a racialized conception of intelligence,” which took for granted that “white people supposedly had normal and above normal cognitive ability, while members of other races supposedly had subnormal cognitive ability” (Stubblefield, 2007, p. 163). As waves of new white immigrants came to the United States in the early twentieth century and their numbers increased due to high birth rates, this understanding of intelligence was also used to differentiate “pure” whites from “tainted” whites (Stubblefield, 2007). The eugenics movement lost momentum as Nazi atrocities came to light (Dixon-Meuller, 1993), but reports of abuse and coercion have continued to be documented (e.g., Gill, 1994; Carpio, 2004).

By the 1960s, the new political agenda was poverty reduction and population control. New rhetoric emerged describing contraception as the key to controlling overpopulation and poverty, placing responsibility firmly on women’s shoulders (Davis, 1983). These policies provided some women with increased contraceptive options, but were also seen as coercive. According to Davis (1983), “it was assumed within birth control circles that poor women, Black and immigrant alike, had a ‘moral obligation to restrict the size of their families.’ What was demanded as a ‘right’ for the privileged came to be interpreted as a ‘duty’ for the poor” (Davis, 1983, p. 210). In Puerto Rico and the United States, for example, government officials encouraged poor women in maternity wards to get sterilized, telling them that reducing their family size would reduce their poverty (Gordon, 1981). Through the 1970s, Native, African American, and Puerto Rican women were regularly sterilized without informed consent or through coercive means. The case of the impoverished, African American sisters (ages 12 and 14) who were sterilized in 1974 without consent is one of the most notorious examples (see Blake, 1995–1996 for discussion). By the late 1970s, it was estimated that 35% of Puerto Rican women were sterilized (Gordon, 1981). Some accounts suggest that 25% of all Native women in their childbearing years and up to 80% on some reservations have been sterilized (Smith, 2003). Scholars have argued that this “missing generation of children” (Carpio, 2004, p. 51) is the result of a campaign of extermination, similar to the colonizers’ slaughter of Native women and children, to keep the next generation from “resist[ing] colonization” (Smith, 2003).

More recently, long-lasting contraceptive methods such as Norplant, Depo Provera, IUD, and sterilization have been promoted not only as effective means to limit poverty but also to curb teenage pregnancy

(e.g., Tolaymat & Kaunitz, 2007) and child abuse (e.g., Thurber, 2005) and to limit the number of babies born to women addicted to drugs. The C.R.A.C.K. program, for example, pays drug addicts to get sterilized or use long-lasting contraceptives. Norplant is no longer on the market due to health hazards, but during the 1990s, it was used as a condition to receive welfare benefits (Blake, 1995–1996), as a condition of probation (Nelson & Nelson, 1995) and instead of incarceration (Welch, 1997). And African Americans and Native Americans were more likely to use Norplant than whites (Malat, 2000).

Cultural Capital

Disadvantaged women may be more likely to experience the negative effects of medicalization due to their lack of the cultural capital valued by medical professionals. Researchers have noted an asymmetrical relationship between doctors and all types of patients (e.g., Maynard, 1991; Pilnick, 1998). But this asymmetry is compounded for women (e.g., Fisher, 1988; Todd, 1989; Roberts, 2000), and especially racial minorities and those in the lower class (Shapiro et al., 1983; Lareau, 2002). For example, Lareau (2002) found that middle-class families' cultural capital led them to ask doctors direct questions, assert their own opinions and generally see the doctor as a peer. On the contrary, working class and poor families often felt intimidated and confused when dealing with professionals. Notably, Downing, LaVeist, and Bullock (2007) found that in interactions with low-income patients of color, health care providers were more likely to advise against having more children than they were in interactions with white middle-class patients. Because education is closely associated with this highly valued cultural capital (e.g., Reay, 2004), examining the effect of education on contraceptive use will be important.

Health Coverage

Finally, evidence suggests that private health insurance and Medicaid might differ in their coverage of reproductive health services. King and Meyer (1997), for example, found that private health insurers often do not cover contraception, while Medicaid and public health clinics generally provide extensive access to contraception to low-income women. And there is evidence that women with government health insurance might be more likely to use long-lasting methods. Malat (2000) found that women who paid for their contraceptive services using government assistance had

4.5 times greater odds of using Norplant than women who paid with private insurance. A Planned Parenthood survey found that “95 to 100% of women implanted with Norplant at certain clinics are Medicaid patients” (Gill, 1994, p. 48). And some “states implant Norplant for free, but will cover the cost of early removal only in cases of ‘documented medical necessity’” (Roberts, 1997, p. 131). Therefore, examining the effect of health coverage on long-lasting contraceptive use will also be important.

DATA AND METHODS

Research Questions

Can racial and economic disparities in contraceptive use be explained by individual factors such as age, number of children, and number of times married? If not, what is the effect of education and health coverage?

Data and Sample

The data for this project come from the most recent National Survey of Family Growth available (Cycle 6) conducted by the National Center for Health Statistics (NCHS) in 2002. Researchers used an area probability sample of U.S. households to conduct 12,571 in-person interviews with men and women aged 15–44. The analysis and discussion here rely on a subsection of the 7,643 women who participated in the survey – 5,657 aged 20 and over, who reported using one of the selected birth control methods.

Variables

The dependent variable was the contraceptive method used the month before the interview, or recent contraceptive method. For the multivariate analysis, I compared use of female sterilization, IUD, and Depo Provera separately to a combined category that included short-term methods or methods that had no affect on the female body: oral contraception, condom, male sterilization, and fertility awareness methods. Diaphragm, cervical cap, female condom, withdrawal, suppositories, sponges, jellies, and creams were also included in this category listed as “other” in the bivariate tables. While

Norplant has played a central role in this debate, I removed it from the list because only 22 respondents used the method (it had recently been discontinued when the data were collected) making it difficult to run bivariate and multivariate analyses. Similarly, I removed the monthly shot and the contraceptive patch as they were relatively new when the data were collected, resulting in few cases. The term “long-lasting contraception” denotes the use of female sterilization, IUD, and Depo Provera – not vasectomy.

The independent variables were separated into three categories. The initial category included income and race/Hispanic origin. Income was measured as percent of federal poverty-level income, based on family size and household income. I limited the race and Hispanic origin variable to non-Hispanic white, non-Hispanic black (African American), and Hispanic because of the low numbers (two or three) using IUD and Depo Provera among women in the Asian and Native American categories.

The second category included control variables that held constant personal factors: age, number of children a woman had (parity), and number of times she was married. The third category included the two possible social sources of this disparity: education and health care coverage. Education level was measured from less than a high school diploma to bachelor’s degree or more. Type of health coverage was categorized as private insurance only, not covered, Medicaid, and public, government, state, or military coverage. Education and health coverage were entered into the multivariate models separately.

Analysis

These data were analyzed in two steps. First, I examined various bivariate relationships to determine which variables should be considered for multivariate models. Second, I constructed separate multivariate binary logistic regression models for female sterilization, IUD, and Depo Provera. Because I could not assume that women relying on sterilization received the same type of health coverage at the time of their procedure (some were sterilized 20 years before the interview), I also ran a separate sterilization logistic regression model that excluded women who were sterilized before 2000. Accordingly, insurance was not included in the overall sterilization model. Because education had no association with IUD use, it was eliminated from that analysis. I included the same control variables for each of the methods.

Hypotheses

Even controlling for personal factors, I hypothesize that African American, Hispanics, and low-income women will be more likely to use long-lasting methods than whites and women with higher incomes. Women with less education will be more likely to use long-lasting methods than women with more education. And women covered by private health insurance will be the least likely of all the categories to rely on long-lasting methods.

FINDINGS

Bivariate Analysis

Table 1 summarizes bivariate cross-tabulations of the variables selected for bivariate and multivariate analysis.

Race and Hispanic Origin

Overall, African Americans and Hispanics tended to use long-lasting methods more than whites. Over 27% of African Americans and 23.7% of Hispanics were sterilized, compared to only 17.2% of whites. Hispanics (3.1%) were slightly more likely to use IUD than whites (1.3%) or African Americans (1.1%). And Depo Provera use was most common among African Americans (7.7%), followed by Hispanics (5.1%), then whites (3.3%).

Whites tended to use short-term methods and vasectomy more than the other groups. Whites (31.6%) were the most likely to use the pill, followed by Hispanics (20.4%), then African Americans (17.5%). Nearly 9% of whites relied on male sterilization, compared to only 1.5% of African Americans. However, greater percentages of African Americans (22.6%) and Hispanics (18.2%) used condoms than whites (16.3%). There was little variation among racial groups for Fertility Awareness use.

Income

Those with lower income tended to use long-lasting methods more often while those with higher incomes tended to rely more heavily on short-term methods and vasectomy. Nearly 34% of women earning less than 150% of poverty income were sterilized, 2.7% used the IUD, and 6.3% used Depo Provera. Of those earning 300% or more, only 16.4% were sterilized, 1.6% used the IUD, and 3.1% used Depo Provera. On the contrary, 34.7% of

Table 1. Bivariate Relationships.

	Female Sterilization	IUD	Depo Provera	The Pill	Fertility Awareness	Condom	Vasectomy	Other	Total % (N)
Total (%)	20.3	1.6	4.5	26.1	1.1	18.5	5.7	22.3	100% (5,657)
Race*									
White	17.2	1.3	3.3	31.6	1.1	16.3	8.6	20.6	100% (3,138)
African American	27.7	1.1	7.7	17.5	.8	22.6	1.5	21.0	100 (1,084)
Hispanic	23.7	3.1	5.1	20.4	1.2	18.2	2.9	25.4	100 (1,157)
Poverty income*									
0-149%	33.9	2.7	6.3	19.8	.8	18.2	2.5	15.8	100% (1,421)
150-299%	25.7	1.6	4.6	24.7	1.0	19.8	6.8	15.7	100 (1,335)
300% or more	16.4	1.6	3.1	34.7	1.8	19.9	10.2	12.3	100 (1,953)
Age*									
20-24 years old	3.1	1.6	7.8	41.9	.6	23.5	.4	21.0	100% (998)
25-29 years old	13.9	3.2	7.3	33.3	.8	22.8	3.3	15.5	100 (909)
30-34 years old	24.7	2.7	3.9	29.6	1.1	20.2	6.4	11.4	100 (984)
35-39 years old	36.5	1.3	1.8	18.4	2.1	17.5	10.6	11.8	100 (944)
40-44 years old	45.9	.9	1.5	11.7	1.8	12.0	14.6	11.6	100 (874)
Parity*									
No children	2.1	.3	3.3	34.7	.4	18.6	1.8	38.9	100% (2,396)
One child	11.0	1.7	8.0	31.2	2.5	26.2	4.1	15.2	100 (973)
Two children	35.5	3.7	4.4	18.3	1.3	16.4	11.6	8.9	100 (1,249)
Three children	49.4	2.4	3.5	12.6	1.3	14.7	10.7	5.3	100 (680)
Four or more children	58.2	2.2	5.3	7.2	.3	10.6	7.0	9.2	100 (359)

Table 1. (Continued)

	Female Sterilization	IUD	Depo Provera	The Pill	Fertility Awareness	Condom	Vasectomy	Other	Total % (N)
Times married*									
Zero	6.9	.5	5.6	29.4	.3	19.9	1.0	36.3	100% (2,612)
One	27.6	2.9	3.7	25.0	1.8	18.7	9.1	11.1	100 (2,520)
Two	48.9	1.1	3.0	16.4	1.4	10.5	12.7	6.1	100 (440)
Three to five	63.5	1.2	1.2	3.5	1.2	8.2	16.5	4.7	100 (85)
Education*									
< High School	40.9	1.8	7.7	14.6	.5	17.4	1.7	15.4	100% (650)
High school/GED	32.5	2.3	5.4	19.6	.6	18.4	6.4	14.8	100 (1,401)
Some college	20.5	1.8	4.3	31.2	1.4	19.4	7.4	14.0	100 (1,524)
education									
Bachelor's or more	9.9	1.9	1.9	39.1	2.4	21.5	9.8	13.6	100 (1,134)
Health insurance*									
Not covered	25.8	3.0	4.5	18.6	1.0	20.6	2.4	24.1	100% (962)
Medicaid	29.6	2.0	10.6	15.3	0.2	19.3	0.6	22.5	100 (653)
Public/government/ military coverage	23.8	1.0	8.6	19.1	1.0	15.9	6.3	24.3	100 (383)
Private insurance	16.8	1.3	3.0	30.7	1.2	18.0	7.5	21.5	100 (3,659)

Note: IUD, intrauterine device; GED, General Equivalency Diploma.

*(χ^2) $p < .001$.

women earning 300% or more poverty income used the pill compared to 19.8% of those earning 0–149%. And 10.2% of women earning 300% or more relied on vasectomy compared to only 2.5% of those earning 0–149%. Condoms were not associated with income.

Age

Use of sterilization increased with age. Approximately 3% of women aged 20–24 were sterilized compared to 45.9% of women aged 40–44. Use of Depo Provera, on the contrary, was inversely related to age with 7.8% of women aged 20–24 using it compared to only 1.5% of women aged 40–44. IUD was used most frequently by women aged 25–34 (3.2%).

Oral contraception and condoms were more likely to be used by younger women while fertility awareness methods and male sterilization were more likely to be used by older women. For example, 41.9% of women aged 20–24 use the pill compared to 11.7% of those aged 40–44. Only .4% of those aged 20–24 rely on male sterilization compared to 14.6% of women aged 40–44.

Parity

Use of sterilization also increased as number of children increased, which is probably related to increased age. Eleven percent of women with one child were sterilized compared to 58.2% of women with four or more children. Women with two children were the most frequent among IUD users (3.7%), and those with one child were most common among Depo Provera users (8%). Use of the pill was inversely related to number of children, as those with no children were most likely to use it (34.7%). Fertility awareness methods (2.5%) and condoms (26.2%) were most commonly used by women with one child, while vasectomy was mostly used among women with two children (11.6%).

Number of Times Married

Use of sterilization was greater among women married more times. Of those married three to five times, 63.5% were sterilized as opposed to 6.9% of those never married. Vasectomy followed the same trend. IUD was most popular among women married one time (2.9%). Meanwhile, Depo Provera, the pill, and condoms were most popular among women who had never been married.

Education

Women with less education generally relied on long-lasting methods while women with more education relied more often on short-term methods and vasectomy. Forty-one percent of women with less than a high school diploma were sterilized and 7.7% used Depo Provera. Meanwhile, only 9.9% of women with a bachelor's degree or higher were sterilized and 1.9% used Depo Provera. Nearly 10% of women with a bachelor's degree or more relied on vasectomy, compared to only 1.7% of women with less than a high school diploma. And 39.1% of women with a bachelor's degree or more used the pill, compared to only 19.6% of women with a high school diploma or General Equivalency Diploma (GED). There was no apparent association between IUD use and education.

Health Coverage

Overall, women covered by private health care tended to rely on long-lasting methods less and short-term methods/vasectomy more than women covered by Medicaid, government health care, or not covered by any health insurance. Seventeen percent of those covered by private insurance were sterilized while 25.8% of those without any health insurance and 29.6% of those covered by Medicaid were sterilized. Three percent of those not covered used the IUD compared to 1.3% of those with private insurance. Only 3% of women covered by private insurance used Depo Provera while 10.6% of those on Medicaid did. Meanwhile, the pill and vasectomy were most popular among women covered by private insurance. Nearly 31% of women covered by private health insurance used the pill, compared to 15.3% of women on Medicaid or 19.1% on public, government, or military coverage. The condom and fertility awareness methods were not associated with insurance type.

Multivariate Analysis

Tables 2–5 illustrate the logistic regression analysis of female sterilization, female sterilization since 2000, IUD, and Depo Provera. The values listed are the odds ratio of using the respective long-lasting method compared to using short-term methods or vasectomy holding constant all other variables in the model. They indicate the change in odds of using the long-lasting method for every one-unit change in the independent variable, or $\exp(b)$. Odds ratios greater than 1 suggest an increase in odds, while odds ratios less than 1 suggest a decrease in odds (Menard, 1995).

Female Sterilization

Table 2 summarizes the multivariate analysis of female sterilization. Race, income, age, parity, number of times married, and education were strong predictors of sterilization.

Race and Income. In the initial model, African Americans and Hispanics were more likely to be sterilized than whites. African Americans had 1.83 times greater odds and Hispanics had 1.34 times greater odds. Both groups remained significant with the introduction of control variables, but Hispanics were no longer significant with the introduction of education. African Americans had nearly two times greater odds than whites of being sterilized in the final model.

Women earning 300% or more poverty-level income were least likely to be sterilized. In the initial model, those earning under 150% poverty income had 2.78 times greater odds and those earning 150–299% had 1.81 times greater odds of being sterilized. This effect remained strong in all of the models, but decreased to 1.91 and 1.39 respectively with the introduction of education.

Age, Parity, and Number of Times Married. In general, older women and women with more children and more marriages had greater odds of being sterilized. For example, women aged 40–44 had 10.25 times greater odds of being sterilized than women aged 20–24. Those aged 30–34 had 3.8 times greater odds. This effect seems to have gotten even stronger with the introduction of education, with 40- to 44-year-old odds increasing to 12.02 and 30- to 34-year-old odds increasing to 4.32.

In the control model, women with four or more children had 12.86 times greater odds, and those with two children had 5.79 times greater odds of being sterilized than women without children. Women with three to five marriages had 4.25 times greater odds of being sterilized than those never married. And those married once had 1.47 times greater odds. Both of these effects remained strong after introducing education. Women with only one child were no longer statistically more likely to be sterilized than women with no children, but those with four or more still had over 10 times greater odds, and those with two children had over five times greater odds of being sterilized. Women married twice had 2.62 times greater odds of being sterilized than women who had never been married. The introduction of these personal factors had little effect on race and income. Holding these variables constant, African American women and those in the lowest income category were slightly more likely to be sterilized than they were in

Table 2. Odds of Using Female Sterilization Compared to Short-Term Methods and Vasectomy.

	Race/Income Effects	Control Variables	Education Effect
Race (White excluded)			
Black	1.83***	2.07***	2.0***
Hispanic	1.34**	1.25*	1.03
Income (300% or more excluded)			
0–149%	2.78***	2.87***	1.91***
150–299%	1.81***	1.77***	1.39**
Age (20–24 years old excluded)			
25–29 years old		2.13***	2.21***
30–34 years old		3.8***	4.32***
35–39 years old		6.25***	7.55***
40–44 years old		10.25***	12.02***
Parity (no children excluded)			
One		1.69**	1.44
Two		5.79***	5.01***
Three		8.73***	7.57***
Four or more		12.86***	10.05***
Times Married (never married excluded)			
One		1.47**	1.65***
Two		2.76***	2.62***
Three to five		4.25***	4.06***
Education (bachelor's or more excluded)			
< High school			5.36***
High school/GED			3.81***
Some college education			2.2***
Health coverage (private excluded)			
Not covered			
Medicaid			
Public/government/military			
Constant	–1.57	–4.86***	–5.64***
Model chi-square	224.35***	1339.14***	1462.46***
(df)	(4)	(11)	(18)
–2LL	4364.97	3250.17	3126.86
<i>N</i> = 3,788 (1,114 sterilized)			

*** $p \leq .001$; ** $p \leq .01$; * $p < .05$.

the initial model, while Hispanics and those in the middle-income category were slightly less likely.

Education. Education is a strong predictor of female sterilization. Women with less than a high school diploma had 5.36 times greater odds of being sterilized than those with a bachelor's or more. Even those with some college education had 2.2 times greater odds.

The decrease in the negative 2 log likelihood ($-2LL$) suggests that the final model is an improvement over the initial and control models. The introduction of education had little effect on the control variables but reduced the coefficient of Hispanic low enough to no longer be significant. This suggests that the Hispanic effect can partially be explained by education level.

Female Sterilization since 2000

Table 3 summarizes the multivariate analysis of women sterilized within 2 years of the interview. Income, parity, and education were strong predictors of sterilization.

Race and Income. In the initial mode, African Americans had 1.47 times greater odds of being sterilized than whites, and there was no significant difference between Hispanics and whites. However, once control variables were introduced, the race effect diminished and was no longer significant in any of the other models.

Women earning less than 300% poverty income were also more likely to be sterilized. In the initial model, those earning 0–149% had 3.83 times greater odds, and those earning 150–299% had 1.86 times greater odds of being sterilized than women earning 300% or more. After controlling for other variables, the middle-income category was no longer significant. The poorest category remained significant though its effect decreased slightly, down to 1.66 in the final model.

Age, Parity, and Number of Times Married. Age and number of times married were not significant predictors of recent sterilizations. However, parity was a strong predictor. Women who had four or more children had 35.89 times greater odds of being sterilized than women with no children. Those with two children had 10.97 times greater odds. The introduction of these control variables decreased the effect of race and income.

Education and Health Coverage. Introduced separately, both education and health coverage were statistically significant predictors of recent

Table 3. Odds of Using Female Sterilization since 2000 Compared to Short-Term Methods and Vasectomy.

	Race/Income Effects	Control Variables	Education Effect	Insurance Effect	Full Model
Race (White excluded)					
Black	1.47*	1.31	1.27	1.26	1.23
Hispanic	1.12	.9	.78	.887	.757
Income (300% or more excluded)					
0–149%	3.83***	2.22***	1.66*	2.11***	1.66*
150–299%	1.86***	1.34	1.14	1.37	1.17
Age (20–24 years old excluded)					
25–29 years old		1.26	1.32	1.34	1.39
30–34 years old		1.08	1.21	1.19	1.3
35–39 years old		1.48	1.75*	1.67	1.9*
40–44 years old		1.02	1.2	1.15	1.31
Parity (no children excluded)					
One		4.03***	3.3***	3.68***	3.06**
Two		10.97***	9.02***	9.87***	8.29***
Three		18.72***	15.18***	16.64***	13.76***
Four or more		35.89***	27.85***	31.38***	24.96***
Times married (never married excluded)					
One		1.07	1.15	1.117	1.18
Two		1.48	1.41	1.6	1.51
Three to five		1.825	1.7	1.9	1.74
Education (bachelor's or more excluded)					
< High school			3.16***		3.18***
High school/GED			2.79***		2.84***
Some college education			1.74*		1.74*
Health coverage (private excluded)					
Not covered				.807	.693
Medicaid				1.64*	1.45
Public/government/military				1.05	1.05
Constant	–3.13***	–5.05***	–5.52***	–5.09***	–5.55***
Model chi-square	85.04***	313.21***	335.44***	321.44***	343.83***
(df)	(4)	(15)	(18)	(18)	(21)
–2LL	1612.72	1384.55	1362.32	1376.32	1353.93
<i>N</i> = 2,922 (248 sterilized)					

*** $p \leq .001$; ** $p < .01$; * $p < .05$.

sterilizations. Women with less than a high school diploma had 3.16 times greater odds of being sterilized than women with a bachelor's degree or more. Those with some college education had 1.74 times greater odds of being sterilized. These effects remained strong and largely unchanged in the final model.

Health coverage was not as strong of a predictor. Those relying on Medicaid had 1.64 times greater odds of being sterilized than women with private health insurance. However, in the final model, health coverage was no longer significant. This suggests that education is a better predictor of recent sterilization than health coverage. However, the decrease in the $-2LL$ suggests that the final model is an improvement over prior models.

IUD

Table 4 summarizes the multivariate analysis of IUD use. Age, parity, number of times married, and health coverage were strong predictors of IUD use. Education had no effect and was not included in this analysis.

Race and Income. In the initial model, and even controlling for personal factors, Hispanics were more likely to use the IUD than whites. They had 1.9 times greater odds controlling for age, parity, and number of times married. However, with the addition of health coverage, Hispanics lost significance. There was no significant difference between whites and African Americans in any model. Women earning less than 150% poverty income were more likely to use the IUD in the initial model, but income lost significance after controlling for other variables.

Age, Parity, and Number of Times Married. Women aged 25–29 were the most likely to use an IUD, with over three times greater odds than women aged 40–44. Women aged 20–24 were also statistically more likely to use the device (with over two times greater odds). In general, women with more children were more likely to use the IUD. Women with four or more children had 13.18 times greater odds of using an IUD than women with no children. Women with one child had nearly four times greater odds.

Regarding number of marriages, women who had been married one time were the most likely to use the device, with 3.59 times greater odds than women who had never been married. There was no statistical difference between women married more than once and those never married. The introduction of these variables slightly decreased the coefficient for race, reducing Hispanics odds from 2.38 in the initial model to 1.9. They also reduced the coefficient for income making the poorest category no longer

Table 4. Odds of Using Intrauterine Device (IUD) Compared to Short-Term Methods and Vasectomy.

	Race/ Income Effects	Control Variables	Insurance Effect
Race (White excluded)			
Black	.96	1.18	1.19
Hispanic	2.38***	1.9*	1.67
Income (300% or more excluded)			
0–149%	2.32**	1.44	1.06
150–299%	1.28	.94	.82
Age (40–44 years old excluded)			
20–24 years old		2.89*	2.7*
25–29 years old		3.17**	3.09**
30–34 years old		2.16	2.13
35–39 years old		.9	.89
Parity (no children excluded)			
One		3.95**	3.88**
Two		9.64***	9.47***
Three		8.02***	8.44***
Four or more		12.42***	13.18***
Times married (never married excluded)			
One		3.36***	3.59***
Two to five		2.43	2.42
Health coverage (private excluded)			
Not covered			2.52**
Medicaid			1.42
Public/government/military			.79
Constant	–4.02***	–6.97***	–7.06***
Model chi-square	31.53***	108.38***	119.19***
(df)	(4)	(14)	(17)
–2LL	741.29	664.44	653.64
<i>N</i> = 2,761 (87 IUD users)			

*** $p \leq .001$; ** $p \leq .01$; * $p < .05$.

significant. This suggests that increased use among the poorest can be partially explained by parity.

Health Coverage. Women with no health coverage had 2.52 times greater odds of using the IUD than women with private insurance. There was no statistically significant difference between private insurance holders and those on Medicaid or government insurance. The introduction of health

coverage erased the Hispanic effect, while the effects of age, parity, and number of times married remained significant and largely unchanged. The decrease in the $-2LL$ suggests that the final model is an improvement over each prior model.

Depo Provera

Table 5 summarizes the multivariate analysis of Depo Provera. Race, age, education, and health coverage were strong predictors of Depo Provera use.

Race and Income. In the initial model, African Americans, Hispanics, and women earning less than 300% of poverty-level income had greater odds of using Depo Provera than white women and women with higher incomes. However, controlling for age and parity, the significance of Hispanics and women in the middle-income category diminished. With the addition of education and insurance, income was no longer a significant factor in predicting Depo Provera use. However, even after controlling for all the other variables, African Americans continued to have 2.02 times greater odds of using Depo Provera than whites.

Age and Parity. In general, younger women were most likely to use Depo Provera. Holding constant the other variables, women aged 20–29 had 2.87 times greater odds of using Depo Provera than women aged 40–44. Twenty-five- to twenty-nine-year-olds had 2.7 times greater odds. The effect of parity was not as strong. Before adding education and health coverage, women with more children generally had greater odds of using Depo Provera than women with no children. For example, women with just one child had 2.02 times greater odds. In the full model, however, only women with four or more children had significantly greater odds (3.08) than women with no children.

Education and Health Coverage. Both education and health coverage were strong predictors of Depo Provera use. By itself and in the full model, all categories of education were significant, signaling that women with less education were more likely to use Depo Provera. Holding all variables constant, women without a high school diploma had 3.51 times greater odds, and women with just a high school diploma or GED had 2.28 times greater odds of using Depo Provera than women with a bachelor's degree or more.

Women covered by Medicaid or by public, government, or military insurance were more likely to use Depo Provera than were women with private insurance. Those covered by Medicaid had 2.2 times greater odds, and those covered by public, government, or military insurance had 2.18

Table 5. Odds of Using Depo Provera Compared to Short-Term Methods and Vasectomy.

	Race/Income Effects	Control Variables	Education Effect	Insurance Effect	Full Model
Race (White excluded)					
Black	2.66***	2.41***	2.24***	2.14***	2.02***
Hispanic	1.56*	1.38	1.1	1.31	1.09
Income (300% or more excluded)					
0–149%	2.65***	1.62*	1.25	1.21	1.01
150–299%	1.68**	1.21	1.05	1.15	1.03
Age (40–44 years old excluded)					
20–24 years old		4.01***	3.38***	3.34***	2.87**
25–29 years old		3.2***	2.91***	2.91**	2.7**
30–34 years old		1.72	1.69	1.65	1.62
35–39 years old		.98	.95	.97	.94
Parity (no children excluded)					
One		2.02***	1.68*	1.71*	1.47
Two		2.19***	1.76*	1.83**	1.51
Three		2.05*	1.54	1.65	1.3
Four or more		4.81***	3.44***	4.15***	3.08***
Education (bachelor's or more excluded)					
< High school			3.81***		3.51***
High school/GED			2.37***		2.28**
Some college education			1.78*		1.76*
Health coverage (private excluded)					
Not covered				1.21	1.04
Medicaid				2.53***	2.2***
Public/government/military				2.33***	2.18**
Constant	–3.36***	–4.9***	–4.69***	–4.33***	–4.57***
Model chi-square	78.16***	128.79***	149.23***	149.92***	166.78***
(df)	(4)	(12)	(15)	(15)	(18)
–2LL	1415.99	1365.36	1344.92	1344.24	1327.37
<i>N</i> = 2,882 (208 Depo users)					

*** $p \leq .001$; ** $p \leq .01$; * $p < .05$.

times greater odds of using Depo Provera than women covered by private health insurance.

The decrease in the –2LL suggests that the full model is an improvement over each of the prior models. The introduction of education and health

coverage weakened the effects of race, age, and parity. The odds for African American and younger women decreased, and all categories of parity lost significance except for one (women with four or more children). However, race and age remained strong predictors in the full model. African American and younger women still had over two times greater odds of using Depo Provera than white and older women.

Assessing the Hypotheses

These findings partially support the hypothesis that poor women and women of color would be more likely to use long-lasting methods, even after controlling for personal factors. African Americans and poorer women had greater odds of being sterilized. However, race was not significant among women sterilized within two years before the interview, and only the poorest category of women remained significant after controlling for other variables. Hispanic women were more likely to use the IUD, but income lost significance. African Americans and women in the poorest category had greater odds of using Depo Provera.

The hypothesis that women covered by private insurance would be the least likely to use long-lasting methods was also partially supported by these findings. Among women sterilized since 2000, those who relied on Medicaid did have greater odds of being sterilized than women with private insurance controlling for personal factors. However, this relationship lost significance with the introduction of education. Women not covered by any insurance had greater odds of using the IUD, and women covered by Medicaid and public, government, or military insurance had greater odds of using Depo Provera.

However, these findings most strongly support the hypothesis that education would be negatively associated with use of long-lasting methods (except for IUD). In every category for sterilization, sterilization since 2000 and Depo Provera, those with less education had greater odds of using long-lasting methods than women with a bachelor's degree or more.

DISCUSSION

Age, parity, and number of marriages were strong predictors, but they alone could not explain racial and economic disparities that exist among contraceptive users. This analysis found that education and health coverage

were also important variables. Even controlling for personal factors, women with less education were much more likely to be sterilized or use Depo Provera than women with a bachelor's degree or more. Women covered by Medicaid or public, government, or military coverage were more likely to use Depo Provera than women with private insurance. And women covered by Medicaid were more likely to be sterilized since 2000 (before adding education to the model).

Hispanics' greater odds of using the IUD in the initial model may be explained by their disproportionately high representation among those who were not insured and their slightly higher mean number of children than non-Hispanics. Greater odds of using the IUD among those earning less than 150% of poverty-level income can also be explained by a higher mean number of children and lack of health insurance. One might speculate that women with low income and no health insurance might choose the IUD for cost reasons. According to *Consumer Reports* (2005), a copper IUD costs \$250–300 plus the office visit every 10 years. A vasectomy can cost up to \$1,000 and the pill costs \$20–50 every cycle. Ten years of the pill would cost \$2,400–6,000.

CONCLUSION

Unfortunately, this data set cannot explain why disadvantaged women are more likely to use long-lasting contraception. But the significance of education and health coverage raise new questions about contraceptive disparities that should be addressed. For example, why are women who rely on public sources of health coverage more likely to use Depo Provera? Do coverage disparities exist, that is, is government-based health insurance more apt to cover long-lasting methods than short-term methods?

Similarly, why is education so closely related to sterilization and Depo Provera use? Does a lack of cultural capital among disadvantaged women play a role here? Do medical practitioners suggest long-lasting methods more often to women with less education? Do highly educated women ask more challenging questions regarding negative effects or research the topic more on their own?

Looking at how sterilization and contraception have been used in coercive and socially controlling ways, one could come to the conclusion that there is a “de facto fertility policy that discourages births among poor women and encourages births among working- and middle-class women”

(King & Meyer, 1997, p. 26). However, various scholars argue that women facing racist and classist forces should not be considered mere victims. They document how many women have actively used coercive policies for their own benefit. For example, in the early 1900s, it was nearly impossible to obtain elective sterilization, especially for poor women with few resources or connections. As such, several women petitioned eugenics boards to be considered for sterilization (Schoen, 2005). Similarly, feminists in Puerto Rico used overpopulation rhetoric and accepted funds from population control advocates to increase use and acceptance of sterilization “to promote their long-standing goal of making safe and effective means of birth limitation available to Puerto Rican women” (Briggs, 2001, p. 51). And African American women and activists fought for birth control options even as concerns about race suicide arose within their community (Roberts, 1997).

From this perspective, we may ask if disadvantaged women choose long-lasting contraception due to logical calculations they have made about their life chances, such as job prospects. Or maybe these methods make sense in the context of their personal relationships. For example, some African American teens prefer the shot because it can be hidden from others (Heavey, Moysich, Hyland, Druschel, & Sill, 2008).

One important factor that is not addressed here is the role that women’s intimate relationships play in contraceptive decision-making. Are women with partners who are more egalitarian or cooperative more likely to use short-term methods and vasectomy? Does happiness with the relationship or the amount of childcare burden shared between partners affect contraceptive choices? How does domestic violence affect contraceptive use? Do long-lasting, female-oriented methods provide women who experience abuse a source of power and control?

Finally, it is important to examine how social disadvantage in general limits options, constrains genuine choices, and effectively acts as coercion. For example, how does social disadvantage affect the authenticity of consent given to participate in anti-poverty, population control, or incentive programs (Brody, 1976; Roberts, 1997)? Barbara Katz Rothman observed, “North American society is geared to small families ... without the provision of good medical care, day care, decent housing, children are a luxury item, fine if you can afford them” (in Beck-Gernsheim, 1989, p. 28). Because contraceptive disparities so clearly run along class and race lines, the cause must be related to disadvantage and privilege and, therefore, requires further investigation.

ACKNOWLEDGMENTS

Thank you to Matt Bahr, Ed Vacha, Eilise Ponce, Paula Dempsey, and Cathy Zimmer.

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SECTION III
INCOME, SES, AND CULTURAL
CAPITAL IN DISPARITIES IN
HEALTH AND HEALTH CARE
DELIVERY

CRITICAL REVIEW OF THE EVIDENCE FOR THE CONNECTION BETWEEN EDUCATION AND HEALTH: A GUIDE FOR EXPLORATION OF THE CAUSAL PATHWAYS

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ABSTRACT

The association between education and health is one of the most robust empiric findings over the past several decades. At each higher level of education, prevalence of most types of chronic disease decreases. However, understanding of the mechanisms through which education is related to chronic disease is limited. Specifically, the literature provides little evidence of the explanatory factors in the pathways linking education

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 137–159
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027009**

and health. Better scientific understanding of the pathways through which education influences health may help to explain the well-documented association between socioeconomic position (SEP) and health and could lead to improved intervention strategies for health disparities. We review the potential pathways through which education may influence health and the evidence that explicitly tests these hypothesized pathways and provide direction for future research in this field.

INTRODUCTION

The association between education and health is one of the most robust empiric findings over the past several decades. The epidemiological, medical, economic, and sociological literature has demonstrated an inverse association between education and mortality (Kitagawa & Hauser, 1973; Steenland, Henley, & Thun, 2002; Manton, Stallard, & Corder, 1987; Mustard, Derksen, Berthelot, Wolfson, & Roos, 1997; Bassuk, Berkman, & Amick, 2002; Davey Smith, Neaton, Wentworth, Stamler, & Stamler, 1996; Sorlie, Backlund, & Keller, 1995; Lantz et al., 1998; Howard, Anderson, Russell, Howard, & Burke, 2000; Lleras-Muney, 2002), cardiovascular disease (Bucher & Ragland, 1995; Kaplan & Keil, 1993; Goldman & Lakdawalla, 2001), impairment of cognitive functioning (Lee, Kawachi, Berkman, & Grodstein, 2003), and certain types of cancer (Bucher & Ragland, 1995; La Vecchia, Negri, & Franceschi, 1992; Martikainen, Lahelma, Ripatti, Albanes, & Virtamo, 2001), to name only a few of the numerous published investigations and reviews. These studies employ a variety of study populations, utilize many different estimation techniques, and control for a multitude of factors. In addition, many important health behaviors, such as avoidance of smoking, have been linked to education (Winkleby, Jatulis, Frank, & Fortmann, 1992; Winkleby, Kraemer, Ahn, & Varady, 1998; Iribarren, Luepker, McGovern, Arnett, & Blackburn, 1997). Despite improvements in standards of living, disparities in morbidity and mortality by socioeconomic position (SEP) appear to be increasing in the United States and the United Kingdom (Feldman, Makuc, Kleinman, & Cornoni-Huntley, 1989; Marmot & McDowall, 1986).

Few studies have explicitly sought to elucidate the pathways by which education influences health. The purpose of this chapter is to review empiric and theoretic investigations as well as previous reviews and to provide direction for future research in the field.

SOCIOECONOMIC POSITION AND HEALTH

SEP is a reflection of social stratification and is most commonly measured by level of education, income, or occupation (Adler & Ostrove, 1999; Oakes & Rossi, 2003). Often, these terms are used to describe the same underlying phenomenon despite being only modestly correlated with one another (Winkleby et al., 1992). Understanding the relative contribution of each of the traditional indicators of SEP to chronic disease and the possible recursive relationships among them implies distinguishing the conceptualization and the operationalization of the factors.

Income

Income reflects spending power, nutritional adequacy, and access to housing, transportation, and health care. It is influenced by occupation and by educational attainment. In modern society, even small increments in income may bring added benefits that improve health, a notion that has been termed a “neo-material” view of the relationship between income and health (Lynch & Kaplan, 2000). Neo-material conditions are directly related to one’s health risk behaviors, psychological status, and social determinants of health (Lynch, Kaplan, & Salonen, 1997), although explanations for this association vary. Some suggest the relationship is explained by physiologic effects resulting from social and economic circumstances (Marmot & Wilkinson, 2001), and others argue that the explanation lies in differential access to material resources (Lynch, Davey Smith, Kaplan, & House, 2000). Some studies have reported a decline in the intensity of the relationship between income and health after the age of 65 in the United States (House et al., 1994; Kaplan, Haan, Syme, Minkler, & Winkleby, 1987). This is an interesting finding that is as yet unexplained, but may be due in part to post-retirement age conditions, in which economic resources other than income are influential in subsistence, including access to health care through Medicare.

Occupation

The relationship between employment status and health has been studied for over a century (Villermé, 1840). Clearly, exposure to toxic substances and other hazardous working conditions may increase one’s risk of morbidity

and mortality (Leigh, 1983; Mackenbach, Kunst, Cavelaars, Groenof, & Geurts, 1997), but what is less obvious is how the prestige of one's occupation relates to health status. Occupational prestige is directly related to physical health, independent of other risk factors (Wickrama, Lorenz, & Conger, 1997; Kunst, Groenof, Mackenbach, & the EU Working Group on Socioeconomic Inequalities in Health, 1998). One hypothesis is that jobs with high psychological demands and low levels of individual control (i.e., decision latitude), which may be associated with jobs of low prestige, predict mortality (Amick et al., 2002). Regardless of the specific pathway, it stands to reason that occupation may serve as a major link between education and income (Lynch et al., 2000).

Education

Educational attainment is one reflection of a person's social standing within a society (Ross & Van Willigen, 1997). While income reflects economic well-being and employment is an activity of production, education represents an accumulation of knowledge, skills, and abilities learned both in school and through experience (Mirowsky & Ross, 2003a). Moreover, education shapes both employment opportunities and earning potential (Ross & Van Willigen, 1997). Several recent studies have found that the relationship between income or occupation and health is weakened or disappears altogether after adjusting for education (Araya, Lewis, Rojas, & Fritsch, 2003; Ellison, 1998; Muller, 2002). However, this finding appears less consistent in British studies (Davey Smith, 1998).

Of the three most commonly used measures of social standing, education is often used because it is usually stable by early adulthood and unaffected by occurrence of serious illness, unlike income and occupation (Elo & Preston, 1996; Kaplan & Keil, 1993). It is also readily obtainable for most study subjects regardless of employment status or a willingness to disclose income (Winkleby, Fortmann, & Barrett, 1990). Moreover, measuring occupational prestige excludes those who are not formally employed, and measuring current income may not adequately reflect sustained exposure to varying levels of income throughout adulthood or to inherited and other non-income sources of wealth (Lynch et al., 2000).

However, the use of education as an appropriate measure of one's social position in society has been debated. Krieger and Fee (1994) argue that social inequalities in health may be masked somewhat by using education because the range of educational levels is less than that of income.

Furthermore, a key issue in the use of education as a measure of SEP is the social and cultural meaning of educational attainment. The significance of a college degree was different for a person who obtained it 50 years ago as compared to obtaining one now (Stewart & Social Environment Working Group of MacArthur Network on SES and Health, 2001). Related to this issue is that the social significance and the economic return for a given level of educational attainment vary by gender and by race/ethnicity (Krieger, Williams, & Moss, 1997; Oliver & Shapiro, 1995). Thus, normative patterns of educational attainment within a given population must be taken into account. Finally, the characteristic of stability of educational status over time has been raised as a potential source of error in estimating social status effects on health, since such stability may mask changes in SEP in adulthood over time (Liberatos, Link & Kelsey, 1988; Stewart & Social Environment Working Group of MacArthur Network on SES and Health, 2001).

Educational status is typically assessed either by years of education completed or in terms of credentials earned. However, some investigators have pointed out that a one-year difference in completing 9th grade versus 10th grade is perhaps not as meaningful as the difference between completing 11th and 12th grade, since a person who has completed 12th grade has also obtained a high school degree, which has important implications for employment opportunity (Krieger & Fee, 1994; Stewart & Social Environment Working Group of MacArthur Network on SES and Health, 2001; Liberatos et al., 1988). Accordingly, Ross and Mirowsky (1999) have further refined the measurement of formal education by identifying three characteristics: quantity (i.e., years of formal education completed), credential (i.e., whether one has a degree), and selectivity (i.e., prestige of one's college).

Predictors of Educational Attainment

To fully understand the association between education and health, it is important to view education within a context of the broader social environment. There are numerous factors that influence educational opportunities, including where one lives (Kawachi & Berkman, 2003a). The social context includes factors such as local and regional economic conditions, transportation, land use, cultural norms and values, climate, and environmental hazards (Macintyre, 1999). Eventual educational achievement is largely determined in childhood and adolescence (Lynch & Davey Smith, 2003), and, as will be discussed later, a child's experiences early in life significantly affect both the physical development of the brain and its

psychological and emotional resilience (Halfon, Shulman, & Hochstein, 2001). Other potentially important factors are the level of education achieved by one's parents (Kuh, Hardy, Langenberg, Richards, & Wadsworth, 2002; Ritsher, Warner, Johnson, & Dohrenwend, 2001) and the involvement of parents in their child's education (Power & Matthews, 1997).

Characteristics of the school that one attends influence academic achievement. For example, one study found that persons who attend school with a higher percentage of minority students have lower achievement in math and science than students who attend school with a lower percentage of minority students (Jordan & Nettles, 1999). The SEP of the community around a school is positively associated with its students' proficiency in math, reading, and science (Lee & Smith, 1995; Marsh, 1991). The size of a school also appears to be associated with students' academic achievement (Lee & Smith, 1995; Lee & Smith, 1997). Educational experiences may also vary by the type of school attended – those who attend a Catholic school tend to have higher grade point averages (GPAs) and be more proficient in reading and math than students who attend public schools (Lee & Smith, 1995; Gamoran, Nystrand, Berends, & LePore, 1995; Gamoran, 1996). Furthermore, students who attend magnet public schools perform better than students who attend mainstream public schools, as do students who attend Department of Defense schools (Gamoran, 1996; Smrekar, Gurthrie, Owens, & Sims, 2001).

Family and individual factors that predict academic achievement include a strong and positive parent-child relationship, measured by perceived closeness to parents (Cohen, Richardson, & La Bree, 1994), sense of parental approval (Khron, Massey, Skinner, & Lauer, 1983), perceived parental involvement (Brown, Mounts, Lamborn, & Steinberg, 1993), perceived parental enthusiasm for child's education and career (Wickrama, Lorenz, & Conger, 1997; Blane D, 2003), and sense of parent support (Wickrama, Lorenz, Conger, Matthews, & Elder, 1997). Race and ethnicity are associated with academic achievement (Jordan & Nettles, 1999; Fejgin, 1995; Gamoran, 1992; Guo, 1998; McNeal, 1999), and disparities in achievement between African American and Hispanic students, compared with white students, persist after controlling for student- and family-level demographics, prior achievement, hours spent working and on homework, maternal characteristics, family structure, school type (i.e., public/private), and geographic region (Fejgin, 1995; Guo, 1998; McNeal, 1999).

The SEP of a student, measured by family income, is positively correlated with academic achievement in childhood and early adolescence; cumulative poverty is negatively correlated with the same measures and appears to be

more damaging when experienced in adolescence (Guo, 1998). Parental occupation and income have been shown to predict 12th-grade achievement in math and science (Jordan & Nettles, 1999), and low SEP is also associated with a lack of awareness among parents of the importance of the first 3 years of life for brain development in their children (Hochstein & Halfon, 1998). After controlling for prior academic achievement, gender, and ethnicity, SEP remains associated with students' performance in math and reading (Gamoran, 1992) and with their GPA (Conger, Conger, & Elder, 1997).

PROPOSED PATHWAYS LINKING EDUCATION AND HEALTH

Although several different types of biologic, psychological, and social pathways have been proposed as possibly explaining the association between education and health, there remains little direct evidence of the mechanisms through which education is related to chronic disease. We review three potential indirect causal pathways – income, healthy lifestyle and related psychosocial factors, and social support – and a proposed direct link between education and health. The evidence reviewed here is limited to the United States and the United Kingdom, and it should be emphasized that the pathways may interact and that the importance of a particular pathway may vary by stage of the life course.

Income

Education enables the earning of income, which allows access to goods and services, including health insurance, housing, and nutrition (Lynch et al., 2000). Lantz and colleagues (1998) suggested that the association between education and income fully explains the differences in mortality by educational level. Educational attainment also increases the likelihood and stability of employment during the earning years (Mirowsky & Ross, 2003b). This pathway is the best established of those investigated to date, with better-educated individuals having higher incomes (Angell, 1993; Pappas, Queen, Hadden, & Fisher, 1993). In fact, studies employing population-based samples have reported that at the same level of income, persons who were better educated had less economic hardship than those with less education (Mirowsky & Ross, 1998; Mirowsky & Ross, 1999). However, one study found that of income, education, and occupation,

education was most closely associated with risk factors for heart disease, including smoking and physical activity (Winkleby et al., 1992). Furthermore, when the three major measures of SEP were analyzed together, only education remained a significant predictor.

Having a high level of education gives people access to better employment opportunities and economic well-being. Reduced spending on education has led to diminished opportunities for the poor to improve their material circumstances (Auerbach & Krimgold, 2001). Individuals with low incomes and low levels of education tend to have health problems that can be contributed to denied or limited access to health care, job-related stress, or lack of work. Mirowsky and Ross (2003c) assert that education improves health by reducing the health problems associated with low income. Despite the findings that those with higher incomes tend to be in better health, McDonough and Berglund (2003) found that current economic stability did not erase the health effects of past poverty experiences.

Human Capital Theory and a Healthy Lifestyle

Human capital refers to “the acquired skills, knowledge, and abilities of human beings (Salamon, 1991),” which may serve to increase human productivity. According to this line of thinking, education (as well as other forms of human capital investments) increases human productivity. The human capital model of the demand for health emphasizes the difference between health as an output and health care as one of many inputs into the creation of health. This framework implies that the benefits of education extend beyond employment, income, and one’s social position to the psychological well-being of individuals (Ross & Van Willigen, 1997). Grossman (1999) suggests that the human capital model serves as an ideal theoretical framework for making predictions about the impacts of many variables on health and an empiric framework for testing these predictions.

Some authors believe that education is the most important investment for developing human capital (Grossman, 1999; Becker, 1993); others suggest that some as yet unmeasured characteristic (such as inherited ability or time preference) makes people more responsive to both health investments and education investments (Fuchs, 1974; Fuchs, 1982). Time preference, or discount utility, is a construct that is thought to quantify an individual’s willingness to forego present consumption in the expectation of greater future benefit, and Fuchs has suggested that differences in the rate of time preference can explain variations in health-related behaviors (Fuchs, 1974;

Fuchs, 1982). Applied to education health research, the idea is that individuals who have a low rate of time preference will attend school for longer periods of time and make larger investments in their own health. According to this line of thought, the effect of education on health is biased if one fails to control for time preference (Grossman, 1999). However, what evidence there is suggests that time preference is a culturally acquired rather than an innate trait, and definitive evidence to support the time preference hypothesis is lacking.

Previous reviews suggest that the same skills and abilities resulting from human capital investments improve health by improving life conditions and psychosocial resources (Ross & Van Willigen, 1997; Oakes & Rossi, 2003). That is, new ideas and techniques are generated to improve health circumstances that equip individuals to utilize new health information and initiate change in health behavior (Berg, 1969). The association between health risk behavior and education appears as early as adolescence (Flay et al., 1994; Greenlund et al., 1996). Education may enhance critical thinking, literacy, and decision-making skills, which in turn allow individuals to be more successful in managing their health and in interacting with the health care system (Lynch et al., 2000; Parker, Ratzan, & Lurie, 2003; National Institutes of Health, 2003; Yen & Moss, 1999; Kohn & Slomczynski, 1993). For example, better-educated individuals are more likely to access and read printed or web-based materials, from which they may learn health-related information (Arkes, 2003; Cardarelli & Licciardone, 2000).

While it is important to address sociological-based explanations for social inequalities in health, individual decisions and health behaviors have also been considered. Because the prevalence of health risk behaviors is higher among those of low SEP (Lynch et al., 1997; National Center for Health Statistics, 1998), some investigators have postulated that individual health behavior may play a strong role in explaining socioeconomic disparities in individual health status. However, longitudinal research has not borne this out, with studies demonstrating that health risk behavior explains only a modest proportion of variation in mortality (Lantz et al., 1998; Lynch, Kaplan, Cohen, Tuomilehto, & Salonen, 1996) and in health status (Lantz et al., 2001).

Education may lead to greater sense of personal control and optimism about the future (Pincus & Callahan, 1994). Sense of control is the belief that one can and does master, control, and shape one's own life (Mirowsky & Ross, 1998), and it is closely related to the concepts of self-efficacy (Gecas, 1989), internal locus of control (Rotter, 1966), and mastery (Pearlin, Lieberman, Menaghan, & Mullan, 1981). There is a positive association

between education and one's sense of personal control, even after adjusting for age, sex, marital status, minority status, occupation, and income (Mirowsky & Ross, 2003c; Ross & Mirowsky, 1992). These psychological factors may empower people to synthesize health-promoting behaviors into a coherent lifestyle, thereby altering health behaviors, adherence to medical treatments, or the ability to self-manage chronic illnesses (Mirowsky & Ross, 1998). The idea is that education "makes individuals more effective users of information (Mirowsky & Ross, 1998)," less predisposed to risky health behavior (Lantz et al., 1998; Ross & Wu, 1995), and more likely to initiate preventive health behavior (Seeman & Seeman, 1983).

In the field of economics, the concept of self-efficacy is sometimes characterized as the factor that empowers highly educated individuals to be more efficient producers of health. According to Grossman (1999), this efficiency may take two forms – productive efficiency or allocative efficiency. Productive efficiency suggests that for the more educated, a larger health output will result from a given set of health inputs. Allocative efficiency implies that education facilitates more efficient choices among a given set of inputs with which to produce health. For example, the better educated may have more knowledge about the harmful effects of certain health behaviors and may understand the benefits of seeking primary care early on in a given episode of illness rather than waiting until the condition becomes more dangerous.

Social Support

Previous reviews have proposed that education may affect health by enhancing social skills and the ability to function in structured settings (Mirowsky & Ross, 1998; National Institutes of Health, 2003). A direct association between education and high levels of social support has been demonstrated (Ross & Mirowsky, 1989; Antonucci, Ajrouch, & Janevic, 2003), although it is not clear what mechanisms underlie such an association. Education may be related to social support by giving people the opportunity to serve in multiple roles within social networks, which may lead to increased social support (Ross & Van Willigen, 1997; Walker, Wasserman, & Wellman, 1993). Alternatively, education may increase one's flexibility in handling conflict in supportive relationships or reduce the prevalence of factors that may serve as stressors such as unemployment and economic hardship (Ross & Van Willigen, 1997; Atkinson, Liem, & Liem, 1986). Related to this pathway, educated parents may promote a healthy lifestyle to their children (Mirowsky & Ross, 1998).

SEP is directly associated with both emotional and instrumental social support in the United States (Matthews, Kelsey, Meilahn, Kuller, & Wing, 1989) and in the United Kingdom (Marmot, Bosma, Hemingway, Brunner, & Stansfeld, 1997). Social support improves psychological well-being and is directly associated with certain physical health outcomes (Kaplan & Keil, 1993). There is a large body of evidence that documents lower risk of depression and psychological distress for individuals with a high degree of social support (George, 1989). Likewise, social support has been linked with all-cause mortality and morbidity (House, Landis, & Umberson, 1988). While emotional support has been linked with physical functioning (Seeman et al., 1995; Seeman, Lusignolo, Albert, & Berkman, 2001), results of the studies of the relationship between instrumental support and disability are mixed, in part due to the potential for reverse causation (Seeman, Bruce, & McAvay, 1996).

Direct Pathway

Some investigators, usually after accounting for the main indirect pathways under study, have concluded that education actually *causes* health (Lleras-Muney, 2002; Grossman & Kaestner, 1997; Berger & Leigh, 1989). Economists Berger and Leigh (1989) examined the effects of education on blood pressure and the probabilities of having functional limitations and disabilities that limit work. The investigators concluded that the observed education – health association was due to the direct effect of schooling rather than the effect of some unobserved third variable such as the rate of time discount. However, the validity of this conclusion has been questioned (Arkes, 2003). The differing perspectives on causality among economists and epidemiologists should be considered when examining the evidence for a direct link between education and health. The most likely direct pathway from education to health is through one or more biologic mechanisms.

BIOLOGIC MECHANISMS

Although it is not clear which biologic mechanisms, if any, may be acting in the pathways described above, a few have been proposed (Brunner, 2000). “Biologic embedding” (Hertzman, 1999b; Hertzman, 1999a; Hertzman & Wiens, 1996) is a concept based on evidence from primate studies, from research on human brain development, and from the relatively new field of

psychoneuroimmunology. The hypothesis is that experiences in early childhood – for example, exposure to an unstimulating, emotionally, and physically unsupportive environment – affects the neurochemistry of the central nervous system, which may lead to abnormal or delayed cognitive and emotional development. These factors may result in poor performance in school, inappropriate behavior, and chronic stress in childhood and adolescence. This stress leads to decreased levels of resistance to disease and altered functioning of vital organ systems, ultimately leading to increased morbidity and mortality (Sapolsky, 1993; Sapolsky, 1998; Selye, 1976).

Evidence from recent research in neurobiology and developmental psychology indicates that brain development is a complex process that results from both genetic expression and experiences before and after birth (Halfon et al., 2001). At birth, the absolute number of neurons, the connections between them, and the myelin that insulates them are not yet fully formed, and evidence has shown that experience, in the form of external sensory stimuli from relationships with caregivers, from the child's physical environment, and a variety of other specific influences, particularly exposure to language, dramatically affects the number of synaptic connections formed and therefore the brain's functional and cognitive capacity (Shonkoff & Meisels, 2000). The significance of this evidence is twofold. First, it suggests that the physical and emotional environment in early childhood ultimately shapes one's opportunity to succeed in school. Second, it may provide a possible explanation for the proposed direct pathway. The early learning experiences that shape brain development and subsequent emotional and self-regulatory behavior may also allow a person to be a more efficient or effective producer of health throughout the life course. Early learning may also protect against cognitive decline in older age, and this protection may result from increased numbers of synaptic connections, better vascularization, or habits of seeking continued mental stimulation, which may ultimately result in both constructive chemical and physical changes in the brain (Albert, 1995).

Another proposed pathway may involve allostatic load, a concept of the impact of chronic stress on the neuroendocrine and physiological functioning that exert influence on health (Taylor, Repetti, & Seeman, 1997; McEwen, 1998). One consequence of stress is an increase in the amount of cortisol circulating in the body (Selye, 1976), which if chronic or prolonged may produce fatigue, immune suppression, insulin resistance, and even neuronal damage (Sapolsky, 1998). It has been suggested that education may influence allostatic load by altering the balance between protective and damaging effects of stress mediators (National Institutes of Health, 2003).

By providing individuals with the knowledge, resources, and confidence to master their own lives and cope with stressors, education may lessen the damaging physiologic response to stress. Evidence from studies of newborn rat pups suggests that there is a critical period in early brain development during which permanent neural modulation of the animal's response to stress is established (Cynader & Frost, 1999).

The possibility of genetic explanations of the education and health correlation cannot be ignored. Genetic endowment and family environment play important roles in health and intelligence. In an analysis of parental education and children's verbal IQ, Neiss and Rowe (2000) found statistically significant genetic and shared environmental influences on children's verbal IQ scores. Miller, Mulvey, and Martin (2001) found that genetic endowment is a major factor accounting for educational attainment. While genetic endowments account for a major effect on children's IQ, the inheritance of IQ is multifactorial (Morris, 1999), and family environmental factors also contribute to IQ levels of young children living with a biological or adopted family. Adoption studies (Neiss & Rowe, 2000) have shown that shared family environmental effects on adopted children's IQ correlate with the education of their adopted family.

It should be emphasized that despite a recent increase in research on biologic mechanisms that may explain part of the association between education and health, caution should be exercised when trying to draw conclusions due to the limited and evolving body of empiric evidence.

DISCUSSION

Investigators have recently called for more research to elucidate the independent contributions of education, income, and occupation to health and disease (Adler & Newman, 2002; Tang, Chen, & Krewski, 2003; van der Meer & Mackenbach, 1999; Kaplan & Keil, 1993; Pincus & Callahan, 1994; Bowling, 2004). Specifically, the epidemiological literature provides little evidence of the explanatory factors in the pathways between education and health, and the National Institutes of Health recently solicited proposals for additional research directed at filling these gaps (National Institutes of Health, 2003). Few empiric studies treat education as a causal factor for disease, but rather as a confounding factor (Pincus & Callahan, 1994). Future research should address this deficiency by isolating the contribution of education to health outcomes and by including measures of the potential mediating factors discussed in this chapter. It is likely that

the education–health association is the result of complex bio-psychosocial processes that place those in low-educational groups at greatest risk, and future work should include the development of a conceptual model linking various pathways.

The complex interrelationships among several of the variables that have been proposed to mediate the relationship between education and health should be considered within a life course perspective (Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003; Kuh & Ben-Shlomo, 1997). Such a perspective suggests that factors such as low birth weight, infections in early life, health behaviors acquired in childhood, and lung function may influence the distribution of adult health in populations (Davey Smith & Lynch, 2004). For example, among 4,271 British adults aged 26–54, those whose fathers were manual workers, an indicator of poorer socioeconomic conditions during childhood, were twice as likely to die at age 54 compared to those whose fathers were non-manual workers (Kuh et al., 2002). Approaches to understanding the association between education and health within a life course perspective take into consideration the period of formal schooling as an opportunity for development, adoption, and maintenance of preventive or harmful health risk behavior (Lantz et al., 2001). It is likely that the proposed pathways linking education and health interact with each other and with different effects at critical points during the course of a lifetime.

Another key issue is the explicit specification of the definition and measure of education as an independent factor. Years of formal education completed or performance scores on academic subjects tells us very little about what was actually learned, and almost nothing about a subject's acquired capacity for understanding, which may be the most crucial factor in mediating the health benefits of education.

Investigators should also consider the broader context within which education takes place. There is mounting evidence of a relationship between neighborhood circumstances and health outcomes (Kawachi & Berkman, 2003b), and investigators should consider how to measure education within the broader societal meaning of education and those factors that might shape opportunities for education in the target population.

Closely linked to the need for improved study designs, future research should consider use of analytic techniques that can more precisely estimate the relative importance of multiple factors in the association between education and disease. For example, studies that allow for inclusion of contextual factors that shape one's educational opportunities may employ the use of multilevel modeling, which allows an investigator to examine variability at both individual and group levels (Bryk & Raudenbush, 1992).

Another technique that may be useful is structural equation modeling, which allows investigators to examine complex relationships among a set of observed variables (Kaplan, 2000; MacCallum & Austin, 2000). Newer applications of structural equation modeling allow for use of multilevel data structures (Muthen, 1994). These statistical tools have been used in the fields of economics, sociology, and psychology and may deserve greater consideration in epidemiological research. A recent example of applying structural equation models in social epidemiological research comes from Sacker and colleagues, who investigated social inequalities in educational achievement throughout childhood (Sacker, Schoon, & Bartley, 2002).

We suggest that future research in this area should explicitly address the issue of causality. A greater understanding of the mechanisms underlying the association between education and health has the potential to inform policy development and interventions with potentially significant benefits to society.

ACKNOWLEDGMENT

The research for this chapter was supported in part by the Rockwell Fund, through the Rockwell Chair in Society and Population Health (MDL).

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THE INFLUENCE OF CHILDHOOD POVERTY ON THE SELF-MANAGEMENT OF HEART DISEASE IN LATER LIFE

Sally Lindsay

ABSTRACT

There is growing evidence to suggest that childhood deprivation is linked to social inequalities and has important consequences for health in later life. Past studies tend to focus on the influence of cumulative deprivation on the risk of developing a particular disease. This study adds to the literature by exploring how deprivation in childhood may be linked to how people (who already have a disease) self-manage their condition in later life. Questionnaires and focus groups were analysed to explore this relationship (n = 91) among coronary heart disease patients living in a deprived urban area of Northern England. The results suggest that childhood deprivation may influence health behaviours and lifestyle in later life especially with regard to diet, health locus of control and doctor visits.

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 161–183
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027010**

INTRODUCTION

The social circumstances of an individual play a key role in their health behaviour and health status (Lindsay, 2008; Link & Phelan, 1995). Socio-economic inequalities in health often reflect differential social circumstances that are divided along social class (Prus, 2007). Evidence consistently suggests that being in a higher social class is linked with having better health, better adherence to treatment, increased communication with doctors and fewer emergency room visits compared to those from lower social classes (Curtis, 2003; Goldman & Smith, 2002; Lorig, Ritter, & Plant, 2005; Prus, 2007). The degree of control people have over their life circumstances, especially stressful ones and discretion to act are key influences in health. Thus, having a higher income and social position can provide a buffer or defence against disease and illness throughout the life course.

However, those who are socially excluded tend to experience poorer health than those who are more affluent. Low socio-economic status (SES) is consistently linked with a higher incidence of morbidity, mortality and poorer coping skills (Link & Phelan, 1995; Prus, 2007). Social class gradients in health are often the result of differences in behaviours such as exercise, preventive health care and the consumption of harmful commodities (Blane, 1995; Townson, 1999). Disadvantaged groups tend to have more problems in accessing health care and encounter barriers in managing their chronic illness such as inadequate neighbourhood resources, financial constraints and safe places to exercise (Bayliss, Steiner, Fernald, Crane, & Main, 2003; Bell & Orpin, 2006; Lindsay, Smith, Bell, & Bellaby, 2007; Lindsay, 2008). Such socio-economic disadvantages can accumulate across the life course and influence health. Here we explore the influence that cumulative childhood disadvantage has on health and specifically on self-managing heart disease.

CHILDHOOD DISADVANTAGE AND THE INFLUENCE ON HEALTH

There is growing evidence to suggest that childhood deprivation is linked to social inequalities and has important consequences for health in later life (Brunner, Shipley, Blane, Davey Smith, & Marmot, 1999; Dedman, Gunnell, Davey Smith, & Frankel, 2001; Groffen, Bosma, van der Akker, Kempen, & Eijk, 2007; Power, Hypponen, & Davey Smith, 2005). The social

environment in which a child grows up has a strong association with the aging process and chronic diseases accumulated over the life course (Guralnik, Butterworth, Wadsworth, & Kuh, 2006). Childhood SES is predictive of disease risk in later life, poor adult behaviours, cognitive function and psychosocial characteristics where those from disadvantaged backgrounds are more likely to experience poor adult health outcomes (Groffen et al., 2007; Hamil-Luker & O'Rand, 2007; Nguyen, Couture, Alvarado, & Zunzunegui, 2008).

Health is a form of life course capital that people either preserve or deplete at varying rates over time based largely on social conditions and human agency (O'Rand & Hamil-Luker, 2005; O'Rand & Luker, 2007; Willson, Shuey, & Elder, 2007). Cumulative advantage in terms of health suggests a process whereby the relationship between SES and health that is initiated early in life becomes magnified over time where advantaged individuals retain and even increase health advantages relative to others as they age (Willson et al., 2007).

Social disadvantage in one generation is often linked to health disadvantage in the subsequent two generations (Modin, Vagero, Hallqvist, & Koupil, 2008). Thus, exposure to health-damaging environments during adulthood may accumulate on top of health disadvantage during childhood (Blane, Montgomery, & Berney, 1998; Calman, 1998; Holland et al., 2000). For example, socio-economic disadvantage in childhood is associated with low educational attainment, risk of unemployment and job insecurity, short adult stature, low adult earnings, adult body mass index, current smoking and HDL cholesterol (Brunner et al., 1999; Power & Matthews, 1997; Peck & Lundberg, 1995; Kuh, Power, Blane, & Bartley, 1997).

Indicators of social circumstances (e.g. SES, family structure and crowding) provide direct support for life course processes (Claussen, Davey Smith, & Thelle, 2003). In a systematic review of the influence of childhood deprivation on health, father's occupational status was the indicator most often used to measure SES circumstances in childhood (Galobardes, Smith, & Lynch, 2006). Evidence from the 1946 British birth cohort study suggests that a non-manual class background can protect children with poor health from further disadvantage (Blane, 2001; Bartley & Owen, 1996). This 'social protection' affect is likely a result of having the resources to engage in health-promoting behaviours.

Housing conditions in childhood is another important indicator for examining the influence of cumulative deprivation on health. A poor household environment is a key determinant of risk for acquiring infections and for exposure to pollutants (Dedman et al., 2001). For example, poor

housing conditions such as lack of private indoor water supply, poor ventilation, exposure to pollutants and allergens in childhood were linked with an increased risk of adult mortality (Dedman et al., 2001). Similarly, overcrowding in childhood has been linked to *Helicobacter pylori* seropositivity in adult life (Mendall et al., 1992), increased rates of stomach cancer in adulthood (Barker, Coggon, & Osmond, 1990) and reduced adult height (Kuh et al., 1997). Housing conditions are often related to socio-economic position which is linked with patterns of health and illness (Dedman et al., 2001). In sum, there are several factors that are associated with childhood deprivation and risk of poor health in later life. Here our focus is on the influence of childhood disadvantage on the self-management of coronary heart disease in later life.

Childhood Disadvantage and Heart Disease

There is consistent evidence to suggest that cumulative childhood disadvantage influences the risk of heart disease (Galobardes et al., 2006; Ljung & Hallqvist, 2006). Examining heart disease to explore the link between childhood disadvantage and the self-management of heart disease in later life is salient because the relationship between childhood disadvantage and poor adult health are especially strong for cardiovascular disease (Fleury, Keller, & Murdaugh, 2000; Hemingway et al., 2000; Panagiotakos, Pitsavos, & Manios, 2004; Petersen, Peto, & Rayner, 2004). Although CHD manifests in adulthood, atherosclerosis (an important underlying process leading to the disease) begins at a much earlier age (Galobardes, Lynch, & Smith, 2004).

The socially patterned accumulation of health capital and cardiovascular risk begins in childhood and continues according to SES position during adulthood (Brunner et al., 1999). For example, early disadvantage and childhood illness have severe enduring effects and increase the risk for heart attack (O'Rand & Hamil-Luker, 2005; O'Rand & Luker, 2007). The accumulated experience of adverse socioeconomic position over the entire life course increases the risk of heart attack (Ljung & Hallqvist, 2006). However, some argue that it is not a 'pure' accumulation process as social mobility and the timing of the accumulation also play a role. The accumulation effect is partly mediated by the acquisition of health-damaging experiences (Ljung & Hallqvist, 2006). Adult pathways can differentially influence trajectories of heart attack risk and mediate the effects of early disadvantage.

In a systematic review of the influence of childhood socio-economic circumstances on the risk for cardiovascular disease in adulthood, Galobardes

et al. (2006) found that childhood and adulthood socio-economic circumstances are important determinants of cardiovascular disease risk. For example, coronary heart disease was inversely associated with socio-economic conditions experienced during childhood. Melchior, Moffitt, Milne, Poulton, and Caspi (2007) similarly found that children who experience socio-economic disadvantage are at a high risk of tobacco, alcohol or drug dependence and higher cardiovascular disease risk by the time they reach adulthood. This excess risk appears to be a result of disadvantaged children's high levels of exposure to multiple types of adversity (Melchior et al., 2007).

Several studies have noted that key risk factors for heart disease operate differently by gender where women who had exposure to socio-economic disadvantage had an increased heart disease risk (Wamala, Lynch, & Kaplan, 2001). Women who grew up without a father and/or under adverse economic conditions were the most likely to experience elevated risk for heart attack, even after adjusting for working and living conditions, social relationships, access to health care and lifestyle behaviours (Hamil-Luker & O'Rand, 2007). Women may be more vulnerable to the effects of early disadvantage because they occupy different structural locations than men.

In sum, heart disease appears to be influenced by factors acting across the entire life course and may conform to a cumulative risk model (i.e. poor child and adult circumstances). Examining different indicators of childhood SES position can shed light on the mechanisms that may help to explain their link with health in adulthood (Galobardes et al., 2004). Past studies tend to focus on the influence of cumulative deprivation on the risk of developing a particular disease. This study adds to the literature by exploring how deprivation in childhood may be linked to how people (who already have the disease) self-manage their heart disease in later life. Furthermore, past research focuses mainly on middle-age and middle-class samples (Barker et al., 1990; Blane et al., 1996; Hamil-Luker & O'Rand, 2007). Here we examine older males and females from a deprived urban area. An examination of heart disease within the UK, like the sample drawn here, is particularly salient given that it has a much higher social class gradient than in other countries (Petersen et al., 2004).

THEORETICAL PERSPECTIVE: CUMULATIVE ADVANTAGE/DISADVANTAGE

A life course approach to health and illness is increasingly being used to help explain socio-economic differentials in morbidity and mortality rates

(Davey Smith et al., 2000; Hamil-Luker & O'Rand, 2007; Lawlor, Batty, Clark, McIntyre, & Leon, 2008; Nguyen et al., 2008). Such an approach to cumulative disadvantage suggests that throughout the life course exposure to disadvantages accumulate and increase the risk of adult morbidity and premature death (Holland et al., 2000). There are two main theoretical explanations linking childhood socioeconomic status to adult health (Hamil-Luker & O'Rand, 2007). The first, known as the latency model, is biologically based and contends that biological imprinting during early childhood and fetal development make a biological imprint on the human organism that makes it more susceptible to illness in later life (Barker, 1992). This theory proposes that early life exposures can programme long-term or permanent changes in biological and behavioural systems (Halfon & Hochstein, 2002). For example, low birth weight has often been found to be linked with blood pressure, cholesterol level and cardiovascular disease related mortality in later life (Miura et al., 2001; Davey Smith et al., 2000).

The second main theoretical model (known as 'pathway model' or 'accumulation of risk' theory) explores intervening life circumstances and the accumulation of risk. The latency and accumulation of risk models are not competing explanations for the relationship between early environments and later health, but instead work together in complex ways (Hamil-Luker & O'Rand, 2007). The accumulation of risk theory proposes that childhood circumstances set individuals on diverse social, economic and behavioural trajectories that in turn influence health (Hamil-Luker & O'Rand, 2007). Individual health systematically diverges over the life course where those who are financially well off tend to experience a less rapid decline in health over the life course (Prus, 2007). The cumulative effects of leading a healthy lifestyle along with other economic advantages and social resources can help to delay health problems into a shorter period at the end of a person's life. Chronic disease is often the long-term outcome of childhood conditions and experiences beginning in utero combined with cumulative exposures across the life course (Blackwell, Hayward, & Crimmins, 2001). Susceptibility to disease is often embedded in a person's biological makeup, however, diseases are expressed and maintained in particular social, economic and cultural environments (Halfon & Hochstein, 2002; Hamil-Luker & O'Rand, 2007).

Early social disadvantage can initiate a sequence of negative influences that can lead to illness or premature death in adulthood (Ben-Shlomo & Kuh, 2002) where one adverse exposure tends to lead and condition responses to another. Thus, health damage may increase with the duration and number of detrimental exposures. People who are poor tend to

experience more health problems over the life course. This may be a result of a negative cumulative effect of a poorer lifestyle and fewer social and economic resources (Prus, 2007; Schofield, 2007). For example, childhood poverty, inadequate housing, stressful family conditions and poor nutrition can lead to unhealthy behaviours, poor school performance, limited job opportunities and income, lack of exercise, diabetes and high blood pressure in adulthood (Ben-Shlomo & Kuh, 2002; Hamil-Luker & O’Rand, 2007). Childhood circumstances can initiate an unequal distribution of working and living conditions, social relationships, access to health care and lifestyle behaviours that affect health (Hamil-Luker & O’Rand, 2007). Thus, cumulative disadvantage is a key mechanism through which an unfavourable position generates further problems across the life course (DiPrete & Eirich, 2006; Willson et al., 2007).

In sum, a person’s social position is often linked to the accumulation of future advantage or disadvantage in health and illness (Guilley & d’Epinay, 2008; Lindsay, Bellaby, Smith, & Baker, 2008; Schofield, 2007). This study adds to the theoretical knowledge of accumulation of risk theory by providing a broader theoretical link between social conditions and health in understanding how contextual factors influence the self-management of heart disease.

METHODS

This chapter draws on a larger e-health project (see Lindsay et al., 2008) that explored the influence of information and communication technology on patient’s ability to self-manage their coronary heart disease. Our sample was drawn from Salford, Greater Manchester, UK because nearly half of the wards are in the top 10% of the most multiply deprived wards in England, including for increased risk for heart disease (British Heart Foundation, 2005). The sample consisted of men and women ($n = 108$) aged 50–74 which was drawn from general practitioners coronary heart disease registries. For this chapter, however, only those who were either born in Salford or had moved there as a child (i.e., under 19 years) were included in the analysis ($n = 91$). This study focuses on a deprived and relatively homogenous sample because it is an effective approach to examine the influence of childhood and adult social circumstances (Galobardes et al., 2004).

The focus of this chapter is the influence of childhood disadvantage on patients’ health outcomes and ability to self-manage their heart conditions. Questionnaires from each participant, 30 focus groups, discussion forums

and Internet log data were collected from May 2006 to September 2007. The study received ethics approval from a University research ethics committee and governance clearance from the local Primary Care Trust.

Our questionnaire data examined health behaviours including diet, exercise and mental health. Frequency of eating *healthy foods* was measured by asking 'Have you consumed any of the following foods over the past 6 months for health reasons?' Responses included: fish, lean meat, fat free milk products, whole grain products, fruits and vegetables and other. The number of responses participants ticked was tallied to give a total healthy foods eaten score. The amount of *bad foods* eaten was measured by adding a series of variables together, which are standardized from the Health Survey for England and include: 'how often do you eat the following foods: chips, sweets, crisps, fried foods, ready-made meals and cakes/biscuits'. For each option the participant could select from a scale ranging from 'at least once/day', 'several times/week', 'about once a week', 'rarely' and 'never'. A higher score indicates eating these foods more often. A total score was summed for all of these six items where the scores could range from 6 to 30. *Exercise* was measured by asking 'how many days in a typical week do you spend in moderate exercise (e.g., 30 minutes or more)?' *Health care visits* included all visits to a general physician (GP) in the past month. *Health locus of control* was measured by using the scale for internal locus of control. Items were measured on a 6-point scale ranging from 1 strongly disagree to 6 strongly agree. Scores ranged from 6 to 36. Items included 'If I become sick, I have the power to make myself well again'; 'I am directly responsible for my health'; 'whatever goes wrong with my health is my own fault'; 'my physical well-being depends on how well I take care of myself'; 'when I feel ill, I know it is because I have not been taking care of myself properly' and 'I can pretty much stay healthy by taking good care of myself'. *Confidence* in managing health was measured by asking, 'How confident are you in managing your health?' where 1 is confident and 0 not at all confident.

Childhood deprivation was measured by examining the main occupation of the respondent's father/head of household and type of housing during childhood. These measures are frequently used as reliable indicators of childhood SES (O'Rand & Hamil-Luker, 2005; Brunner et al., 1999; Dedman et al., 2001; Galobardes et al., 2004, 2006; Hamil-Luker & O'Rand, 2007). The respondent's father/head of household's main occupation was measured and classified according to the Register General's classification of occupations (General Register Office, 1966): professional, intermediate, semi-skilled non-manual, skilled manual, semi-skilled and unskilled. Given the small numbers in some categories they were combined

(1) professional/intermediate, (2) semi-skilled manual, (3) semi-skilled and (4) unskilled. *Type of housing* during childhood was measured by whether the parents owned or rented their house. ANOVAs were used to examine the influence of childhood socio-economic circumstances on current health behaviours among patients with coronary heart disease.

Focus Groups and Web Discussions

Within the focus groups participants were asked to describe their heart conditions, general health and the conditions/environment that they grew up in. Although this was a semi-structured format participants were encouraged to talk freely about their experiences. Focus groups are particularly useful with older people, especially those who are chronically ill and may have traditionally been excluded from other forms of research (Bowling, 1999). Given that this was an exploratory analysis using focus groups was an effective method for obtaining rich data where the participants could build on one another's responses (Asbury, 1995).

The focus groups were tape-recorded and later transcribed verbatim. These along with the discussion forums (from www.heartsofsalford.net) were sorted, coded and categorized with the aid of NVIVO, a qualitative data analysis programme (Richards, 1999). This programme assisted in condensing the data and identifying relationships among central themes of childhood conditions of poverty. The project drew on interpretive traditions within qualitative research, where researchers sought an in-depth understanding of the participants' experiences (Green & Thorogood, 2004). The analysis began by reading through each transcript several times and noting emerging themes and patterns. Analysis gradually evolved into the stage of axial coding, which was concerned with the properties of the themes of childhood disadvantage of health and their inter-relationships.

Salford, Greater Manchester

The heart patients under examination in this study are from a deprived area and hence, are predisposed to future deprivation and social disadvantage. In Salford, Greater Manchester, UK, where this study is located many wards 'suffer from significant problems of deprivation, with low demand and obsolete housing, derelict and underused land and buildings, and poor environmental quality' (Salford City Council, 2003). Salford was once in the

heart of the industrial revolution and very quickly became overpopulated. The poor quality terraced houses were crowded together as many as 8 per acre, leading to further deprivation (Cooper, 2005). Increased competition from outside of the UK undermined the competitiveness of local textile businesses. Following World War II there was a significant population decline in Salford and thousands were unemployed during the great depression. A survey in 1931 reported that parts of Salford were among the worst slums in the country where many of its houses were infested by rats and lacked basic amenities (Cooper, 2005). A recent survey rated Salford as the ninth worst place to live in the UK, based on crime, education, lifestyle and employment (BBC News, 2005). Salford has consistently had high levels of unemployment, housing and social problems (Cooper, 2005) and is also a particular black spot for health deprivation (Cooper, 2005; Salford City Council, 2003). A health divide is particularly notable between Salford and the rest of England. Although there have been significant reductions in the death rate from heart disease the death rate in Salford remains 25% higher than the Northwest average and 50% higher than for England and Wales as a whole (Salford Primary Care Trust, 2005). Thus, examining the self-management of heart disease within this area can provide a useful insight into the influence of cumulative disadvantage on health.

RESULTS

Reflections on Childhood Conditions

The following examples help to provide a context to the living conditions these participants experienced during their childhood. The participants recalled the level of poverty in the area during their childhood. Several of them described how they did not have hot running water or a washroom in their house while growing up.

I was born in a house on [deprived inner city area] street. My memories don't really start until I was about 5 years old. Dragging up the lane, past the mill, past the die works and on to school. The cobbled terrace lined streets and the grocers. I always felt shamed when my mam would send me for a bag of fades (bruised fruit). I'm sure most of you have been there.

Such social disadvantages early on in life may have influenced health behaviours later on in life. Crowding was commonplace in Salford

neighbourhoods. Having a family of four or five people living in a two-bedroomed terraced house was typical. For example, several people described their childhood living conditions as something like this: 'I lived in a two up, two down terraced house with my Mam, Dad and two sisters. We had no hot water and an outside toilet. People were very poor back then'. Others described the living conditions during and shortly following WWII and what they would do to pass the time.

The Manchester ship canal ran past the bottom of our street and the railways shipped a lot of sulphur along the rail track. There was always a policeman in a little hut who stopped anyone from going on the canal bank but we still managed to get there and used to play sliding down the sandy banks, after the war or even during. There was a lot of big ships that used the docks as they were then and they used to throw oranges and chocolate and gum over the side to anyone who was brave enough to run the gauntlet so to speak as those things were very scarce at that time.

These participants clearly lacked safe places to play and had inadequate extracurricular activities when they were younger. Some people described what they would do to earn a little extra spending money during their childhood.

When I was about 4 years old and still living in Lower Broughton us kids use to put sticky chewing gum on the end of a pole and peer down grids looking for coins that had fell through the grates. Not very healthy but it provided a nice income for our penny chew bars and even the odd wagon wheel. All our leisure activities took place locally.

Between our house and the tram office was a bomb site known as the little croft, here we would play for hours making outlines of shops and houses out of the bricks left on the site. On Saturdays the little croft would be taken over by cars parking as the owners would be attending Manchester United. We would charge them sixpence (two and a half pence today) to mind their cars.

Having a lack of access to sports and recreational facilities as a child may have influenced their activity level and opportunities for health-promoting behaviours.

Many people said they did not realize the extent of poverty in the area during their childhood. It was not until they were older, usually when they started working in hard-labouring jobs, that they realized the impoverished conditions.

My dad was a builder's labourer and my mam was a machinist. I had a lovely childhood and was never aware how poor the local area was. There were numerous widows living in the street whose husbands had died in the war. The whole area was a warren of terraced streets.

There were limited leisure activities for the children growing up in this area. They may have been unaware of how poor their area was given they had few opportunities to travel outside of it. The participants vividly recalled the working conditions of their fathers and other family members. They were aware of the impact such work had on their father's health but often did not consider the impact on their own health, especially in the longer term.

We lived close to Salford docks and I had two uncles who worked there. They either worked for the day or stamped. They used to be paid time and half or double pay for working with such materials as lamp black, sulphur and even asbestos. They did not realise at the time how working with such materials would affect their health in later life. Sulphur got in your clothes and caused a burning sensation in your eyes. Lamp black was murder to clean from your clothes and asbestos which we use to throw at each other like snow balls was later found to cause cancer.

Exposure to such contaminants early in life can be very dangerous to health and may have increased susceptibility to illness later in life. Even breathing in the dust particles can cause illness 20–50 years after exposure (Pannone, 2005). This was especially concerning for many of the people whose fathers worked in such jobs because asbestos was not banned in England until 1989 (Pannone, 2005). There is no safe exposure to asbestos and even living near an asbestos factory or living with someone else who brought dust home from their work clothes can be hazardous. There was little attention paid to the health of workers during this time let alone the impact it had on children's health.

Most people recalled how laborious and unhealthy their father's jobs were and how this may have contributed to lifestyle choices.

It's easy to forget these days just how hard some jobs were back then. My father died in his 60s but he smoked all his life and liked a drink. He was shot twice in World War II as well. I think he just had a hard life. He worked hard to provide money to bring us up and played hard with a now considered bad lifestyle to relax.

Another man similarly described his father's work and their living conditions near the shipping canal.

My dad worked on the docks for about twenty-eight years. Hooks, lamp black and sulphur. We won't mention the whiskey. My brother's bedroom backed on onto one of the docks and I remember the ships that docked there. The Clan line, Manchester liners and the Harrison line. I could hear the trains shunting as I lay in bed at night the docks were really busy then.

Growing up in a stressful environment where their fathers have a manual class job may have an influence on a child's choices in later life.

The working class conditions during their childhood seemed to have consequences for their nutrition. Several people discussed how lean their diets were when they were growing up:

We had fat in our diets then but meat was a luxury so you never had too much on a weekly basis as part of your diet. Chicken was as rare as a sirloin steak.

Others agreed that their diets were deprived because of their poor economic circumstances.

It's not style the life we were brought up in living in Salford but the poverty in years gone by that dictated the diet you ate and the atmospheric conditions that were still prevalent up to the early sixties.

Growing up in a working class culture, gave rise to the expectation that you would follow in similar footsteps. Often it was because the opportunities to get a higher education and better job were lacking.

It was a real working class environment and all I was required to do upon leaving school was to go out and earn some money. This resulted in me getting one dead end job after another. Even if you're bright as a child it's still harder to break out of the poverty trap to reach for higher education.

Only 13% of this sample had a university degree or college diploma, whereas the remainder had high school equivalent or less. Some people had realized early on that it would be difficult to move out of their deprived situation that they had grown up in. Consequently, many of them went on to work in similar labour-intensive jobs and hazardous working conditions as their fathers. One man describes the conditions of the manual job that he had

The worst was asbestos without any protection at all. I remember working on nights at one time and I was on the quay in the train wagons, got a cut and later the bloody asbestos started growing from the cut like a tree. I tell you no lie. Lamp black came from your skin weeks later. Sulphur made you cry rivers and iron ore made you think you were doing time. Shovels were provided but it was a joke. The ore was in big lumps like the ones you see in some gardens. There was no way you could use them and the tub was over your head all the time waiting for you to fill it. Pit props were a good job. When I say good, if you had a good team you were paid good bonus even though the dock labour board were always short changing you to the end.

Although, these participants were not always aware of how deprived their surroundings were as a child it may have shaped their lifestyle and health behaviours. Most of them did not discuss a direct link between childhood environment and current health. Having fewer social and economic resources, being embedded within an impoverished community with inadequate housing, stressful family conditions and poor nutrition may

have affected their health in later life. Next, we examine the influence of cumulative disadvantage on the self-management of heart disease in later life drawing on quantitative evidence.

*The Impact of Cumulative Disadvantage on Self-Management
of Heart Disease*

The quantitative evidence in this study links childhood conditions with current self-management behaviours of patients living in Salford with heart

Table 1. Sample Characteristics ($n = 91$).

	<i>n</i>	%
# Born in Salford and area	75	82.4
House ownership (during childhood)		
Owned	19	20.9
Rented	40	44.0
Father's main occupation		
Professional/intermediate	12	13.2
Semi-skilled manual	44	48.4
Semi-skilled	13	14.3
Unskilled	12	13.2
Total household income (current)		
Under £5,200	13	14.3
£5,201–£7800	19	20.9
£7,801–£13,000	26	28.6
£13,001–£20,800	10	11.0
£20,801–£31,200	0	0
£31,201–46,800	9	9.9
£46,801+	4	4.4
Confidence in managing health		
Confident	82	(90.1)
Not confident	9	(9.9)
	<i>Average</i>	
Age	62.5	
Health utilization (# of visits)	0.92	
Diet		
(Frequency of bad foods)	14.49	
(Frequency of healthy foods)	3.54	
Days in moderate exercise	3.46	
Health locus of control	22.98	

Note: Sample size varies because of missing data.

** $p < .01$.

disease. Table 1 shows the characteristics of the sample. The age ranged from 50 to 74 with the average age of the sample being 62.5 years. The majority of the sample (82.4%) was born in Salford and surrounding areas, whereas the remainder moved there as a child. Only 20.9% of the sample’s parents/caregivers owned their house during their childhood, whereas 44% rented. The majority of the sample’s fathers/head of household were semi-skilled manual labourers (48.4%), followed by semi-skilled (14.3%), professional/intermediate (13.2%) and unskilled (13.2%). The median current total household income was between £7,801 and £13,000 with very few people earning above £46,000 per year. In terms of health variables the average number of health visits to the GP in the past month was 0.92. Their average score for frequency of eating bad foods was 14.49 whereas their score for eating healthy foods was 3.54. They spent an average of 3.46 days per week in moderate exercise. Most of the participants were ‘somewhat’ confident (56%) in managing their health, followed by being ‘very’ confident (34.1%) and 9.9% were not at all confident. The average health locus of control score was 22.98.

Table 2 illustrates the ANOVA results of the influence of the fathers/head of household’s main occupation during childhood on current health. There was a significant difference between fathers’ occupation and diet where those whose fathers were in professional jobs were eating bad foods more often compared to those whose fathers were in unskilled/semi-skilled jobs.

Table 2. Father’s Main Occupation during Childhood and Current Health (*n* = 91).

	Professional/ Intermediate	Semi-Skilled	Semi-Skilled Manual	Unskilled
Doctor visits	1.16 (1.46)	0.76 (0.72)	0.95 (1.11)	0.91 (0.99)
Diet (bad foods)	16.33 (4.57)	13.53 (2.75)	14.65 (2.95)	12.81 (3.37)*
Healthy foods	3.75 (1.48)	3.92 (1.25)	3.44 (1.62)	3.50 (1.50)
Confidence	1.00 (0.00)	1.00 (0.00)	0.86 (0.34)	0.83 (0.38)
Health locus of control	23.54 (3.83)	25.36 (2.94)	22.30 (4.26)	21.90 (2.76)*
Exercise	3.90 (1.37)	3.41 (1.62)	3.22 (1.45)	3.72 (1.10)

**p* < 0.05.

Table 3. Parent's House Ownership Status during Childhood and Current Health ($n = 91$).

	Owned	Rented
Doctor visits	0.26 (0.73)	0.82 (0.90)*
Diet (bad foods)	13.33 (2.99)	15.76 (2.97)*
Healthy foods	3.42 (1.46)	3.35 (1.75)
Confidence	0.89 (0.31)	0.87 (0.33)
Health locus of control	22.17 (4.96)	22.97 (3.68)
Exercise	3.35 (1.45)	3.37 (1.47)

* $p < .05$, ** $p < .01$.

The participants whose fathers worked in unskilled or manual jobs had significantly lower health locus of control scores compared to those in professional and semi-skilled jobs.

Table 3 highlights the association between parent's house ownership status during childhood and current health. A significant relationship was found with diet (eating bad foods) where those whose parents rented during their childhood currently eat bad foods more often than those whose parents owned their house. The participants whose parents rented their house when they were a child also reported having significantly more current doctor visits compared to those whose parents owned their house. In sum, childhood cumulative disadvantage seemed to have an influence on current diet, health locus of control and frequency of doctor visits.

DISCUSSION

The purpose of this chapter was to explore the influence of childhood deprivation on the self-management of coronary heart disease in later life. Exploring heart disease is relevant because the relationship between childhood disadvantage and poor health in later life are particularly strong for cardiovascular disease (Panagiotakos et al., 2004). Past research on cumulative deprivation and health tends to focus on the *risk* of developing a particular disease. This study adds to the literature by exploring how

deprivation in childhood and poverty throughout the life course may influence how people (who already have heart disease) self-manage their condition in later life. Moreover, past research focuses mainly on middle-age and middle-class samples. This study examined older people from a deprived urban area of Northern England. Drawing our sample from England is useful because the UK has a much higher social class gradient for heart disease compared to other countries (Petersen et al., 2004).

There have been relatively few qualitative studies examining the influence of cumulative deprivation on adult health. Our qualitative findings provided descriptive accounts of what the area of Salford, Greater Manchester, UK was like during their childhood and also their father's working conditions. Most recalled how they were crowded into small terraced houses with no hot water and no indoor washrooms. Their descriptions of their leisure time as a child highlighted their lack of safe places to play and lack of opportunities for health-promoting behaviours. Most of their fathers worked in manual jobs and often with dangerous substances, such as asbestos, lamp black and sulfur, which children were also exposed to, increasing their susceptibility to illness in later life. Furthermore, the lack of opportunity for higher education often left people with little choice but to take manual jobs that were similar to the ones their fathers had. Participants also described how there was often little money to buy nutritious food which may have had implications for their health later in life. Clearly these participants lacked economic and social resources which could have had an impact for their health throughout the life course. The degree of control people have over their life circumstances and discretion to act are key influences in health.

The quantitative findings suggest that childhood deprivation may influence health behaviours and lifestyle in later life among patients with coronary heart disease, especially with diet, health locus of control and doctor visits. Participants whose parents rented their house during their childhood had poorer current diets (eating bad foods more often) compared to those whose parents owned their house. This is consistent with past research where those who are from low SES are more likely to have a poor diet (Regidor et al., 2008; Sundquist, Malmstrom, & Johansson, 1999; Van Lenthe & Mackenbach, 2005). Poverty is often accompanied by isolation, boredom and depression, behaviours that may encourage snacking (Darmon & Drewnowski, 2008).

The findings in relation to diet and fathers' occupations are somewhat inconsistent with past research. Our results show that participants' fathers' occupations significantly influenced their current diet where those whose fathers had more professional backgrounds ate bad foods more often than

those whose fathers were from manual or unskilled occupations. Given the poverty of the area they may have lacked access to healthy foods and good grocery stores. Indeed, the quality of food choices is often directly influenced by the ease of access to a supermarket and the availability and variety of healthy foods in neighbourhood stores (Darmon & Drewnowski, 2008). Accessing healthy food is somewhat problematic in poorer areas because supermarkets are often clustered in more affluent neighbourhoods (Diez-Roux et al., 1999; Zenk, Schulz, & Hollis-Neely, 2005).

The second key finding was in relation to frequency of doctor visits. Our findings show that the participants whose parents rented their house had significantly more current doctor visits than those whose parents owned their house. This is likely because those who are poor are more likely to have health problems and thus, may visit the doctor more frequently. This finding is consistent with past research which suggests that low income neighbourhoods are associated with increased health care utilization (Lemstra, Neudorf, & Opondo, 2006; Pevalin, 2007).

The third key finding linked childhood deprivation and health locus of control. The participants whose fathers were in unskilled work had poorer health locus of control compared to those whose fathers were in more professional jobs. Past research consistently suggests that sustained economic hardship is linked with having poorer coping skills and poorer mental health (Lynch, Kaplan, & Salonen, 1997; Lynch, Kaplan, & Shema, 1997; O'Rand & Hamil-Luker, 2005; Pevalin, 2007; Prus, 2007).

In conclusion, deprivation accumulated during childhood appears to influence the current self-management behaviours among heart patients from a deprived urban area of Northern England. Early social disadvantage can initiate a sequence of negative influences that impact health in adulthood. This may be a result of a negative cumulative effect of a poorer lifestyle and fewer social and economic resources to effectively lead a healthy life. This study adds to the theoretical knowledge of accumulation of risk theory by providing a broader theoretical link between social conditions and health in understanding how contextual factors influence the self-management of heart disease. Future research should explore the more specific mechanisms leading to changes in self-management behaviours.

ACKNOWLEDGMENTS

The funding for larger project, on which this one draws, was provided by the Economic and Social Research Council within its 'e-society' programme and

the HEFCE Social Research Infrastructure Fund. The author acknowledges the broader influence of Paul Bellaby, Simon Smith, Rose Baker and Frances Bell. I would also like to thank the project staff Safeena Aslam and George Gergianakis for their assistance in this project.

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THE ROLE OF CULTURAL CAPITAL IN THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS AND HEALTH OUTCOMES: THE CASE OF HEMODIALYSIS PATIENT COMPLIANCE

Paul Bugyi

ABSTRACT

This chapter attempts to clarify the underlying mechanisms of the relationship between socioeconomic status and health outcomes. Former studies of this relationship have largely focused on the materialist predictors of health outcomes, examining variables such as income, access to healthcare, or quality of housing. The current study, by contrast, looks at individuals' behaviors and attitudes, particularly in relation to physicians, and their impact on the quality of care patients receive. Using data from a sample of 64 hemodialysis patients in a middle-class suburb of Long Island, I examined the effect of comfort and ease with doctors and willingness to engage them on patient compliance. The findings suggest that patients who are more comfortable asking their

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care**

Research in the Sociology of Health Care, Volume 27, 185–209

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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027011

doctors how they feel, and those that push for more information in general, tend to be more compliant, and therefore enjoy better and more successful patient outcomes.

THE ROLE OF CULTURAL CAPITAL IN THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS AND HEALTH OUTCOMES: THE CASE OF HEMODIALYSIS

It is well known that there is a strong relationship between social class and health. Those with higher educational levels, income, and occupational status have lower rates of morbidity and mortality (Feinstein, 1993; Marmot, Kogevinas, & Elston, 1987; Marmot & Shipley, 1996; Navarro, 1990; Williams & Collins, 1995). This association holds true for all causes of death regardless of how researchers define social class (Wilkinson & Economic and Social Research Council (Great Britain), 1986). However, the exact mechanism by which this association manifests itself is unclear, since these macrolevel analyses, while enlightening, do not explore how class operates in a behavioral sense.

In an attempt to clarify possible solutions to this problem and lay out a plan for research, Feinstein (1993) constructs a typology of inequality in healthcare. He has argued that inequality is caused by four major factors: materialist lifestyle effects (e.g., quality of housing), materialist healthcare effects (ability to purchase health care), behavioral lifestyle effects (e.g., smoking habits), and behavioral health care effects (ability to follow physicians instructions).

In this chapter I refer to Feinstein's typology to examine inequalities in terms of behavioral health care effects. Although materialist factors are important in creating inequalities in healthcare delivery, the impact of patients' behavior in determining these inequalities has not been sufficiently addressed. By applying Pierre Bourdieu's (1977) concept of cultural capital, the goal of this research is to understand the mechanisms by which behavior of patients determines the quality of the care they receive.

Dialysis units serve as what Merton (1987) calls a "strategic research site" for examining the effect of class-based behavioral differences between patients on the care they receive. All citizens of the United States who suffer from End-Stage Renal Disease (ESRD) have access to dialysis since Medicare covers the cost. Therefore, the economic variable, which has a

substantial impact on overall health in many different settings, is controlled for when looking at dialysis patients. Another advantage of this specific site is that while the incidence of ESRD varies with education, this relationship is so weak that ESRD population looks a lot like the general population.

Despite the benefits of studying the relationship between class-based behavior and health outcomes in a controlled setting, measuring actual outcomes is a difficult task. Mortality rates are sometimes used in research on dialysis outcomes, but I choose to use patient compliance. Compliance is the most important aspect of a dialysis patient's life since noncompliance leads to sickness, complications, and death (Ganesh, Stack, Levin, Hulbert-Shearon, & Port, 2001; Saran et al., 2003). Compliance is used as a proxy for health because compliant patients tend to be generally healthier. Since overall health is more difficult to measure, and is influenced by a variety of other factors, compliance is used as the outcome in this study.

Using data from a questionnaire administered in a suburban dialysis unit on Long Island, a statistical relationship between a component of cultural capital and patient compliance was established. As will be shown, patients who were more comfortable asking doctors how they felt, and also those who pushed for more information in general, were more compliant patients. We can therefore assume that patients who have higher levels of cultural capital in this population, at least the linguistic/interactional aspect of it, are healthier patients. Therefore, this study supports Bourdieu's thesis that outcomes are not simply an economic matter, but rather that habits embedded within people have real affects in particular fields, in this case the healthcare field.

FACTORS RELATED TO PATIENT COMPLIANCE WITH HEMODIALYSIS

The literature on hemodialysis patient compliance is extensive, yet there is not a lot on which scholars and physicians agree. Some researchers posit that noncompliance represents a response to a threat of the loss of a perceived freedom. Fogarty (1997), following the work of Brehm (1981), uses reactance theory to explain patient nonadherence. Reactance theory states that when limits are placed on specific behaviors (in the case of dialysis-diet and time), some individuals will react to regain the original loss of freedom. In the case of dialysis, patients who are told not to engage in a set of behaviors (manage diet, restrict fluids), react angrily and ignore these requests.¹

Although the literature using reactance theory is limited, the Health Beliefs Model is the main theoretical alternative for understanding non-compliance. Essentially, this model is a cost–benefit analysis involving how patients perceive the advantages of following doctors’ orders. If patients do not think that changing or limiting certain behaviors, taking medications, or attending treatment appointments will make them healthier, they will less likely engage in these behaviors. There are some studies that link these beliefs to dialysis patient compliance (Cummings, Becker, Kirscht, & Levin, 1982; Krespi, Bone, Ahmad, Worthington, & Salmon, 2004; Wolcott, Maida, Diamond, & Nissenson, 1986).

The problem with both reactance theory and the health beliefs model is that these frameworks rely solely on a psychological/rational choice explanation. What are the factors which lead to people to make these decisions? Are they simply hard-wired from birth to (1) react to a perceived threat and (2) believe that a behavior will make you healthier? By introducing a framework based on Bourdieu’s theory of cultural reproduction, this research provides a sociological alternative for understanding patient compliance.

Beyond some of the theoretical frameworks already discussed, past research has shown a variety of factors that influence patient noncompliance. It is clear that noncompliance with aspects of the treatment regimen is linked to higher mortality rates (Ganesh et al., 2001; Saran et al., 2003). The clearest example of non-compliance is hyperkalemia, or potassium overload. Since the kidneys excrete potassium, dialysis patients must be extremely careful with their potassium intake. Potassium is removed in limited amounts during treatments, yet builds in the bloodstream between those treatments. If the level rises too high, a patient could experience cardiac arrhythmia leading to sudden death.

Beyond the clear relationship between hyperkalemia and mortality, relationships between chronic noncompliance with various aspects of the dialysis regimen and mortality have also been substantiated. Ganesh et al. (2001) found that persons with phosphorous levels greater than 6.5 mg/dl have a 41% greater chance of death from coronary artery disease, and a 20% greater chance of death from sudden death, infection, and other unknown causes. Saran et al. (2003) found that skipping treatments was associated with a 30% higher mortality rate, and shortening treatments raised the mortality rate by 11%. The researchers found that high interdialytic weight gain was also associated with mortality, raising the rate by 12%.

Despite these statistical associations, the relationship between compliance and mortality is not well understood. O’Brien (1990) found that some patients who live well beyond the average time for dialysis patients were

noncompliers. Of the 126 original subjects interviewed in her study, the 33 patients who survived 9 years felt that following the renal diet to perfection was impossible and counterproductive in many ways. Some stated that not eating certain foods made them weak, whereas others said that they had to break the rules sometimes to feel “normal.” These patients learned to “manage” their diet, fitting it to their individual physical and social needs. O’Brien makes an analytical distinction between “ritualized” and “reasoned” compliance behavior, illustrating the decision of patients either to piously follow doctors’ orders or to integrate the regimen with their lives to achieve a sense of normalcy. To be a ritualist, according to O’Brien, can present its own problems, particularly the inability to enjoy eating and drinking – activities that are tied to social integration and are a source of pleasure.

Other research has found a variety of factors linked to compliance of dialysis patients with their treatment. Though most studies found a positive relationship between social support and compliance (e.g., Gee, Howe, & Kimmel, 2005; Gallant, 2003; Patel, 2005; O’Brien, 1980), others did not find such a relationship (Cummings et al., 1982; Christensen, Wiebe, Smith, & Turner, 1994). Some scholars found a link between depression and non-compliance (DiMatteo, Lepper, & Croghan, 2000; Taskapan et al., 2005). Typical noncompliers also tend to be minorities (Leggat et al., 1998), males (Kugler, Vlamineck, Haverich, & Maes, 2005; Safdar, Baakza, Kumar, & Naqvi, 1995), smokers (Baines, 2000; Kugler et al., 2005; Kutner, Zhang, McClellan, & Cole, 2002; Leggat et al., 1998) and persons from a lower socioeconomic status (SES) (Baines, 2000; Brownbridge & Fielding, 1994; Chow, Szeto, Leung, Law, & Li, 2005; O’Brien, 1980; Safdar et al., 1995).

THEORETICAL FRAMEWORK

Although the advantages that come along with high SES have been well documented, the exact mechanisms by which such advantages manifest themselves remain largely unclear. For instance, when cognitive ability is controlled for, there is still a good amount of unexplained covariance between SES and educational attainment (Crouse, Mueser, Jencks, & Reichardt, 1979; Sewell & Hauser, 1975). This finding suggests that there are other factors mediating the relationship between social background and attainment. Pierre Bourdieu sought to illustrate the behavioral aspect of this relationship by introducing the concept of cultural capital (Bourdieu & Passeron, 1977). According to Bourdieu and Passeron, the school is a setting whereby members of the elite (the school teachers and their administrators) identify those

students who represent the future of that class. They speak with a certain linguistic capability, dress in a particular manner, and possess knowledge of high-brow culture. Social classes are reproduced in a process whereby these identified students are given advantages within the classroom by teachers leading to better grades, and later on to the acquisition of high prestige jobs.

Despite the popularity of Bourdieu's concept of cultural capital, its application in research has been met with mixed or no results (Bugyi, 2008; Kingston, 2001). Some scholars have suggested that the operationalization of the concept in quantitative work is flawed (Lamont & Lareau, 1988). However, ethnographic and other qualitative studies have illustrated how people are taught to play the system (Lareau, 2002) or how their lack of cultural capital excludes them from it (Bourgois, 2003).

Lareau's study of childrearing practices by middle-class versus working-class and poor parents provides the clearest example of how skills, habits, and dispositions (*habitus*), are transmitted from parents to children. Middle-class parents engage in *concerted cultivation*, a process whereby these parents prepare their children to live in the professional world. Middle-class parents train their children how to ask the right questions and be confident in situations and interactions that involve professionals (doctors, teachers, and the like), while also providing them with training in a multitude of organized leisure activities. These children develop a sense of comfort in organized and institutional settings, helping them to attain success in such surroundings.

However, working-class and poor parents engage in childrearing practices that prepare their children to understand the inferior position that they will one day inhabit. Lareau calls this practice *natural growth*, referring to the mostly hands-off approach that these parents take. Outside of providing shelter, food, and love, one of the only preparatory habits that working-class and poor parents instill is a sense of obedience. According to Lareau, these children develop an emerging sense of constraint that entails discomfort with professionals since these are not people to be trusted. Because of the fact that professionals will probably be these children's bosses one day, parents instruct their children to be docile, quiet, and obedient in their presence. The resulting feelings that emerge among these children are ones of hesitancy and fear.

This logic is consistent with Kohn's (1969) work on class and families where he argues that work is the mechanism by which class values are transmitted. Since middle-class parents expect their children to have careers similar to theirs (i.e., jobs that require self-direction), they teach them these values. Also, working-class jobs require obedience, so working-class parents teach their children these values. The main difference between Kohn and Lareau on this point is that Kohn sees values as the source of behavior,

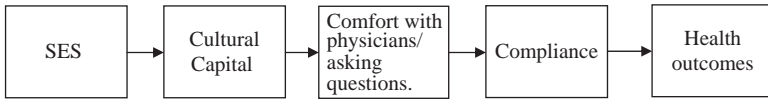


Fig. 1. Flow Chart Describing the Relationship between SES and Health Outcomes.

whereas Lareau would argue that habitus – habits and dispositions – is the basis of action.

Lareau’s study suggests a possible mechanism by which socioeconomic background affects social outcomes. She identifies the process whereby one acquires middle-class versus working-class habits, skills and dispositions. Her research fills some of the gaps left by Bourdieu, who was unclear in terms of how these behaviors were transferred through generations.

In this chapter I seek to apply Bourdieu’s and Lareau’s ideas and theoretical frames to the study of dialysis patient’s compliance with their treatment. My goal is to analyze the impact of socioeconomic dispositions on health outcomes using quantitative measures. I expect those patients who are more comfortable asking doctors questions, and those who push for more information, to feel more at ease in institutional settings. Because of this ease, they should have access to more and better information which in turn should lead to better outcomes. See Fig. 1 for an illustration of the theoretical framework. Essentially, the quantitative analysis for this project focuses on the third box (comfort with physicians), and the fourth box (compliance):

DATA AND METHODS

The data used in this study are from a questionnaire administered to dialysis patients during their treatment (only two of the patients who completed the questionnaire did so outside of the dialysis unit). The patients receive their dialysis at an outpatient clinic in the suburban Northeast at a nonprofit corporation with approximately 100 patients. I approached patients during their treatments, asked them if they wished to fill out a short questionnaire about dialysis, and also told them that I was one of the patients. The nurses, technicians, or I collected the surveys when the respondents were finished.

Patients who did not speak English or were mentally incapacitated were excluded from the study. Also, some patients usually slept during the entire treatment and were unable to participate in the study. Of the 67 patients who were asked to complete the questionnaire, 65 of them did so (a response rate of

97%), although 1 patient got sick and could not finish the questionnaire. Forty patients identified themselves as white, 16 patients were black, 4 Hispanics, and 3 Asians, with 2 whose racial/ethnic background was not identified. Thirty-eight patients were men, and 27 women. The vast majority of the questionnaires were filled out by the patients privately and anonymously. A few had to be delivered orally by the researcher because some patients who had poor eyesight, and could not fill out the questionnaire by themselves.²

The sample represents the general dialysis population in the United States rather well. Although the unit is located in one of the most affluent areas of the country (the north shore of Long Island), the patients do not seem to reflect that population. Only one-quarter of the sample has at least a 4-year college degree, and only 40 of the 64 respondents identify as white.

MEASURES

Dependent Variable

Self-Reported Compliance

The dependent variable is self-reported compliance, measured by an overall index of five separate measures (Table 1): how often doctors have to talk to the individual about how much fluid they gain being a problem (from rarely to all the time – a 4-point scale), phosphorous problems (a 4-point scale), potassium problems (a 4-point scale), how often the individual comes off the machine early (a 4-point scale), and how much time the individual misses when they come off early (a 5-point scale). The compliance index therefore ranged from 5 to 21 points, with 5 being the low bound (most compliant) and 21 being the high bound (least compliant).

Cultural Capital Independent Variables

Comfort with Doctors

Respondents were asked five questions concerning their comfort with doctors: how comfortable they felt asking about medications, treatment length, and medical procedures; comfort asking how one is feeling; and comfort asking if he/she feels something is wrong. Each question was measured on a 5-point scale from very comfortable to very uncomfortable. A comfort index was created which summed the responses to five variables with a possible range 5–25. These five variables were also considered

Table 1. Compliance Variable.

	Rarely	Sometimes	Often	All the Time	
How often do you gain more fluid than you are limited to	1	2	3	4	
How often do doctors have to talk about high phosphorous numbers	1	2	3	4	
How often do doctors have to talk about high phosphorous numbers	1	2	3	4	
	Never	Once in a month	Once in 2 weeks	Once in a week	All the time
How often do you ask to be taken off the machine early	1	2	3	4	5
	Do not miss	Less 5 min	5–15 min	15–30 min	More 30 min
How much time do you miss if taken off the machine early	1	2	3	4	5

separately in the data analysis. Hypothetically, patients who score higher on these five items (or on the index) should be less compliant.

Pushing for More Information

Respondents were asked if they pushed for more information when they did not understand an aspect of dialysis. This was measured on a 4-point scale from rarely (1) to all the time (4). Patients who push less for more information should be less compliant.

Control Variables

Respondent’s Age

Age is measured numerically. The literature claims that younger patients tend to be less compliant (Kugler et al., 2005; Leggat et al., 1998; Safdar et al., 1995). Age-squared is also included in the models as a variable since the relationship between age and compliance is nonlinear (bell-shaped).

Respondent’s Gender

Gender is a dummy variable, with male as 0 and female as 1. Kugler et al. (2005), Boyer, Friend, Chlouverakis, and Kaloyanides (1990), and Bame, Petersen, & Wray (1993) find that males tend to be less compliant.

Respondent's Race and Ethnicity

Race/ethnicity is a five-category variable that includes Hispanics, Black, Whites, Asians, and others. Leggat et al. (1998) found that blacks tend to skip treatments more often than whites.

Respondent's Education

Education is coded into five categories: did not finish high school; high school diploma; two-year college degree or some college; four-year college degree; and advanced degree. Low education should predict less compliance (see Baines, 2000; O'Brien, 1980; Safdar et al., 1995).

Smoker/NonSmoker

Smoking was a dummy variable with nonsmoker coded 0 and smoker 1. Smokers tend to be less compliant (Baines, 2000; Kugler et al., 2005; Kutner et al., 2002; Leggat et al., 1998).

Renal Diet Knowledge

Knowledge of the renal diet measured on a 4-point scale from excellent (1) to poor (4). Borkman (1976) finds that patients who understand their treatment regimen tend to be more compliant.

Time to Medication Refill

Scores on the variable, the time it takes for the respondent to get a medication when it runs out are on a 4-point scale: (1) never runs out, (2) less than 1 day, (3) between 2 and 3 days, and (4) more than 3 days. Cummings et al. (1982) find that those who do not have easy access to med refills tend to be less compliant,³ although it is only one of the many situational factors that affect compliance in their study that are not measured here.

Frustration Tolerance

Measures the degree to which the respondent deals with problems or difficult circumstances. Scores are on a 4-point scale varying from highly tolerant (1) to easily frustrated (4). Kaplan De-Nour (1981) finds that patients who have less of a tolerance for frustrating circumstances tend to be less compliant.

Importance of Behavior for Health

This measures the belief of the importance of individual's own behavior on his/her health.⁴ Scores are on a 4-point scale varying from very important

(1) to not important at all (4). This measure addresses the health belief model – theoretically, patients who have a greater belief that their behavior will influence their health will tend to be more compliant (Cummings et al., 1982; Krespi et al., 2004; Wolcott & Maida, 1986).

Compliance Strategy

Respondents were asked whether they responded to symptoms (i.e., the patient would behave as they wished until they got sick or became symptomatic; coded 0) or set limits on their own behavior (i.e., the patient would create fixed limits per day to control their diets; coded 1). Patients who respond to symptoms tend to be less complaint (Kirilloff, 1981).

Living Situation

Living situation is coded 0 for unmarried and 1 married. There is an extensive literature on social support and compliance. The effect of social support is significant at times, and others not (Bisschop, Kriegsman, Beekman, & Deeg, 2004; Cummings et al., 1982; McClellan, Stanwyck, & Anson, 1993; Patel, Peterson, & Kimmel, 2005; Sensky, Leger, & Gilmour, 1996).

Life Satisfaction

This variable is measured on a 4-point scale from very satisfied (1) to very dissatisfied (4). Armstrong and Woods (1983) find that those more satisfied with life are more compliant.

Quality of Family Relationships

This variable is measured on a 4-point scale from excellent (1) to poor (4). Pentecost, Zwerenz, and Manuel (1976) found that patients who have stronger family relationships were more compliant.

RESULTS

Descriptive statistics are reported in Table 2. Sixty percent of the respondents are men; 61.5% white. More than 40% have a high school diploma and approximately 20% have at least a 4-year college degree. Only 19% of the respondents are smokers, and their average age is approximately 57, with the youngest patient being 30 years and the oldest patient being 88 years.

Table 2. Means and Percentages for Variables Used in the Analysis ($N = 64$).

	Percentages
Sex	
Female	36.9
Male	60.0
Missing	3.1
Race	
White	61.5
Non-White	35.3
Missing	3.2
Education	
<High school	9.2
High school diploma	40.0
Two-year college degree or higher	47.7
Missing	3.1
Smoking	
Nonsmoker	81.0
Smoker	19.0
Living situation	
Married	61.3
Not married	36.9
Missing	1.8
	<i>Means</i>
Age	56.7
Comfort talking with doctors about (5-point scale, very comfort–very uncomfort)	
Medications	1.39
Treatment length	1.56
Medical procedures	1.52
How you are feeling	1.72
If you think something is wrong	1.88
Pushes for more information (4-point scale, rare–all the time)	3.17
Time to medication refill (5-point scale, none–>3 days)	1.75
Knowledge of renal diet (4-point scale, excellent–poor)	1.95
Importance of behavior for health (4-point scale, very important–none)	1.11
Frustration tolerance (4-point scale, very tolerant–very frustrated)	1.90
Life satisfaction (4-point scale, very satisfaction–very dissatisfaction)	1.87
Family relationships (4-point scale, excellent–poor)	1.51

The analysis uses Ordinary Least Squares Regression (OLS) and proceeds in three steps (Table 3). The first model includes factors that are (1) mentioned in the literature and (2) are statistically significant (in this case age, gender, health beliefs, and timely medication refill). Other variables that

Table 3. OLS Regression Models for Patient Noncompliance ($N = 64$).

	Model 1	Model 1.1	Model 2	Model 2.1	Model 3	Model 3.1
Age	1.190 .269 (.163)	1.468 .332 (.181)	1.149 .260 (.152)	1.257 .284 (.181)	.916 .207 (.148)	1.476 .244 (.165)
Age-squared	-1.449* -.003 (.001)	-1.670* -.003 (.002)	-1.420* -.003 (.001)	-1.484* -.003 (.001)	-1.168 -.002 (.001)	-1.277 -.003 (.001)
Gender (1 = female)	.342** 2.270 (.713)	.330** 2.188 (.732)	.313** 2.079 (.670)	.296** 1.961 (.691)	.300** 1.992 (.647)	.286** 1.897 (.667)
Refills medications late	.328** 1.083 (.358)	.358** 1.182 (.378)	.282** .930 (.339)	.318** 1.051 (.357)	.234* .773 (.334)	.262* .866 (.354)
Believes behavior is unimportant for health	.153 1.567 (1.102)	.146 1.497 (1.187)	.193 1.975 (1.039)	.168 1.722 (1.115)	.259* 2.656 (1.044)	.239* 2.455 (1.124)
Responds to symptoms (compliance strategy)	-.179 -1.251 (.752)	-.160 -1.123 (.810)	-.236* -1.657 (.715)	-.202 -1.414 (.766)	-.254* -1.782 (.692)	-.223* -1.562 (.742)
Uncomfortable asking doctors how you feel			.311** 1.035 (.339)	.308** 1.027 (.353)	.400*** 1.333 (.351)	.398*** 1.327 (.366)
Does not push for more information					.247* .902 (.391)	.248* .906 (.406)
<i>Demographic variables</i>						
Smoker		-.141 -1.162 (.974)		-.147 -1.205 (.913)		-.146 -1.201 (.881)
Ethnicity		-.059 -.285 (.643)		-.018 -.088 (.606)		-.055 -.266 (.590)
Education		-.077 -.233 (.342)		-.031 -.095 (.324)		-.002 -.007 (.316)
Living situation (1 = married)		-.072 -.482 (.878)		-.087 -.583 (.823)		-.083 -.556 (.794)
Constant	1.625	2.953	.733	2.399	-1.597	-.110
R^2	.360	.388	.450	.473	.498	.519
Adjusted R^2	.294	.275	.383	.363	.426	.408

* $p < .05$; ** $p < .01$; *** $p < .001$ for two-tailed test.

First number reported is the standardized coefficients, the second number is the unstandardized coefficients, and the number in parentheses is the standard error.

previous research suggests are important factors influencing patient compliance (knowledge of the renal diet, frustration tolerance, life satisfaction, and family relationship satisfaction) were included in previous regression runs but were not statistically significant and are not included in the table. Also, four of the five comfort variables (as well as the comfort index) do not appear in the table, since they have no significant impact on patient compliance. Owing to the small number of cases used in this study, it was inappropriate to include all the variables in the final models.

In short, the models presented only include significant findings and important controls (education, race, smoker/non smoker, and marriage status). The second model adds comfort with doctors asking questions about how the patient feels, and the third models adds how often the patient pushes for more information. Each of the three models also includes the full models with independent controls (education, ethnicity, and marital status), and if the patient smokes (see Models 1.1, 2.1, and 3.1).

Model 1 shows that as age increases, noncompliance also increases. However, at a certain age (around 65), this trend reverses as shown by the standardized coefficient of the age-squared variable. As age increases after this point, people tend to become *more* compliant, in fact much more compliant.⁵ Model 1 also shows a statistically significant relationship between gender and noncompliance. Women in this population tend to be less compliant than men, which is a surprising finding because the literature shows men as being less compliant than women (Kugler et al., 2005; Boyer et al., 1990; Bame et al., 1993). Further, patients that take longer to get their medication refilled also tend to be less compliant. Model 1.1 includes control variables (ethnicity, education, marital status, and smoking status), none of which is statistically significant. R^2 increases very slightly with the control variables, yet the adjusted R^2 (which accounts for the number of predictors in the model) decreases, suggesting that the best model does not include these controls.

Model 2 includes comfortability with doctors as an independent variable. The hypothesis that people who are less comfortable asking doctors how they feel will be less compliant is supported. Model 2 also illustrates that people who respond to symptoms (as opposed to those that set limits on their behavior) tend to be less compliant as well. When the “comfortability” variable was added to the model, “sets limits on behavior/responds to symptoms” variable became statistically significant, suggesting that the model that includes comfort with doctors contains less overall error. When we add the control variables (see Model 2.1), the comfortability variable remains significant, although the effect of the limits/responds variable declines to just below a level that would be significant at the .05 level.

Model 3 illustrates the impact of the communication thesis further as we now include a variable that measures if patients ask or do not ask for more information. Patients who tend not to push for more information are less compliant with their overall dialysis regimen. When we control for education, ethnicity, marital status, and whether or not the patient smokes (see Model 3.1), our communication variables are still significant. Also, the adjusted R^2 for the model without controls is higher than the model with controls, suggesting that it is a better fit.

DISCUSSION

The goal of this study was to determine whether the linguistic aspect of Bourdieu's notion of cultural capital is applicable to healthcare settings. I hypothesized that middle-class patients would have distinct advantages when interacting within institutional settings since they have been trained in early childhood to be comfortable and confident with professionals. This comfort and confidence should be important when discussing medical matters such as asking about medications, asking general questions about how one feels, and having an overall sense of participation in their own healthcare. Lareau (2002) suggests that since working class and poor people are encouraged to realize that relationships with authority figures are hierarchical (with themselves in the inferior position) a good rapport would be difficult to establish. Patients with this type of background would either completely follow their doctors' orders unquestioningly or develop antagonistic relationships due to resentment (Willis, 1977).

Although it is difficult to assess the overall health of a patient in a survey questionnaire, it was possible to measure compliance rates as the dependent variable. Since compliance is a very good predictor of health for dialysis patients, it is a suitable proxy for overall health. Moreover, it theoretically fits Bourdieu's and Lareau's framework since compliance entails the ability to not only navigate a series of instructions from professionals but also to communicate problems and concerns that need constant surveillance and reflection.

The data suggest that the ability to communicate with doctors and nurses (to talk about how one feels, to push for more information) is linked to better patient compliance. Patients who tend to be less comfortable asking doctors how they are feeling are less compliant overall. In addition, people who strive to receive more information tend to be more compliant dialysis patients, suggesting that patients who take a more active role with their treatment regimen have an outcome advantage. In this sense, Bourdieu's

notion of cultural capital proves useful, as does Lareau's framework of concerted cultivation versus natural growth.

However, a relationship with other measures of comfortability was not found. Comfortability with asking doctors about procedures, medications, treatment length, and if the patient thought that something specific was wrong was not found to be significantly related to patient compliance. One possible explanation for this lack of association is that these questions involve specifics about the treatment regimen and do not express concerns about overall health. When dealing with authority figures and feeling somewhat uncomfortable, one might find it easier to ask relevant, specific questions rather than talking about vague issues concerning general well-being. Also, asking someone for more information runs outside the norm of strict doctor-patient relationships where it is expected that the physician will tell the patient all he or she needs to know. Asking for more information could be considered presumptive and rude by some. However, with such a small sample size it is difficult to come to any final conclusions concerning these measures of comfort with physicians.

Since behavior is linked to class location in both Bourdieu and Lareau's frameworks, and that SES is linked to patient compliance (Baines, 2000; Brownbridge & Fielding, 1994; Chow et al., 2005; O'Brien, 1980; Safdar et al., 1995), it is somewhat surprising that no significant statistical relationship between education and compliance was found in this study. Also, there was not a statistical relationship between education and any of the comfort variables or the pushes for more information variable (see Table 3; Models 2.1 and 3.1). The lack of findings could be explained here by the nature of the population studied and also by not having included other measures of SES such as income and occupation, which certainly would be included in further analysis. Also, since Bourdieu argues that habitus constitutes itself early in childhood, it would be useful to include parent's income, occupation and education in future studies (as some previous research on cultural capital has included). Also, only 13 of 65 patients in the sample had at least a 4-year college degree, a fact that has something to do with the age of the patients. Since most of the patients in the sample are over 50 years, and quite a number are over 70, the education variable probably underestimates the SES of quite a few patients, all the more reason to include income and occupation.

The relationship between age and compliance does not quite follow the literature but makes theoretical sense. The younger patients in the sample (those between 30 and 39 years) tended to be more compliant than those aged 40-59. Those over 65 tended to be the most compliant patients. A possible explanation for this U-curve relationship would be that young

patients acknowledge the possibility of having kidney problems for a long time and therefore take better care of themselves. Those who are a bit older might not have quite the same motivation to be compliant because their options are fewer and the end of their life might be nearer. Unlike older patients, who tend to eat and drink less (making compliance less of a burden on them), the middle-aged patients are more similar to the younger ones in their nutritional habits and needs, and therefore may find compliance quite hard. Another factor that might be an advantage for older patients is that many of them lived through the Great Depression and WWII. This fact may make them better equipped to survive on less.

Surprisingly, there is a statistical relationship between gender and compliance, with women being less compliant than men. The literature on gender and compliance usually identifies the relationship as being in the opposite direction, with men – particularly young men – being less compliant (Bame et al., 1993; Boyer et al., 1990; Kugler et al., 2005). My analysis also supports some of the factors that were previously found to predict patient compliance (situational, health beliefs, and strategies), but did not find a statistically significant relationship for others (smoking, ethnicity, and social support).

CONCLUSIONS

This study explores whether Bourdieu's concept of cultural capital is useful for understanding how patients deal with chronic illness, in this case kidney failure. People who feel at ease talking with physicians and those who feel entitled to ask questions (thus having an impact on their own care) tend to be better dialysis patients. Although the present analysis does not directly measure the impact of childrearing on behavior as Lareau does in her work, this study does suggest that particular strategies used by parents may impact outcomes later in life. In a larger sense, the results presented here support the notion that economic resources are not the sole advantages that provide benefits to individuals. Persons who know how to manage the system can speak properly, ask questions, and generally feel comfortable in social situations in which there are institutional authorities implying hierarchical relationships have an overall advantage compared to those who may feel inferior and constrained, seeing the social distance between themselves and professionals as an unbridgeable gap.

Although the data here suggest only one piece of this phenomenon, the exact mechanism through which this relationship works is still unclear.

Further investigation is required, particularly the use of in-depth interviews that would illuminate the question of how one becomes comfortable with physicians. Moreover, how feeling comfortable with doctors leads to better diet, drinking less, and not shortening treatments are still vague. What is also unclear is whether or not comfortability is actually tied to social class. Both Kohn (1969) and Lareau (2002) argue that this sense of entitlement is linked to parents occupation. If middle-class parents are preparing their children for a middle-class world (i.e., including interacting with a variety of professionals), these children need to be trained to act accordingly. An alternative hypothesis could be that some individuals are predisposed psychologically to be comfortable in interaction. In the present research, the lack of a statistically significant relationship between education and compliance, as well as the comfort variables may suggest that comfort may be a psychological effect or a cultural effect, and not a social class effect. Regardless of the source of these trained or hard-wired instincts, the impact they have in this health care setting is important due to significant differences in patient outcomes.

NOTES

1. The reactance variable was not included in this analysis since it is difficult to measure in a questionnaire, and the phenomenon would best be captured in an experiment (see Fogarty, 1997).

2. It is possible that administering questionnaires to persons face-to-face could skew the results. Specifically, there might be something theoretically interesting about visually impaired patients that may not be expressed properly through the questionnaire. This is not taken into account in the results.

3. There was some debate concerning the use of this variable as an independent predictor. Colleagues suggested that it should be part of the compliance *dependent* variable. However, having the ability to get to the pharmacy easily is part of situational factors. Sometimes it is a choice to not get your medications, but many patients who run out simply cannot get it whenever they choose.

4. This variable should be treated with some skepticism. Analyses using the Health Beliefs Model usually consist of a series of questions that attempt to measure the degree to which patients believe different aspects of their treatment actually have beneficial effects, not simply one question that deals with this issue in a general way. Also, the mean score of 1.11 (on a scale from 1 to 4) suggests limited variability of the respondents. Unfortunately, time and other practical constraints led to the omission of a better measure.

5. The graph shows a small increase from 30 to 40 years in noncompliance, then a small decrease in noncompliance from 40 to 60, and then a substantial decrease in noncompliance from 60 years onward.

ACKNOWLEDGMENTS

I would like to thank Ken Feldman, Andrea Tyree, Eran Shor, and David Roelfs for comments on an earlier draft of this chapter. I would also like to thank John Shandra for assistance with the analysis.

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APPENDIX

Questionnaire

First I'd like to ask some questions about your experience with dialysis:

1. How long have you been receiving dialysis treatments?
 - a. Less than 3 months
 - b. Between 3 and 6 months
 - c. Between 6 months and 1 year
 - d. More than 1 year
 - e. More than 5 years

2. How often do you gain a lot more fluid than you are limited to?
 - a. Rarely
 - b. Sometimes
 - c. Often
 - d. All the time
3. What is your dry weight?
_____KG
4. What range of fluid do you normally take off during treatment?
 - a. Less than 2 kilos
 - b. Between 2 and 3 kilos
 - c. Between 3 and 4 kilos
 - d. Between 4 and 5 kilos
 - e. More than 5 kilos
5. How often do doctors have to discuss high phosphorous numbers after monthly blood-work?
 - a. Rarely
 - b. Sometimes
 - c. Often
 - d. All the time
6. How often do doctors have to discuss high potassium numbers after monthly blood-work?
 - a. Rarely
 - b. Sometimes
 - c. Often
 - d. All the time
7. How often do you ask to be taken off the machine early?
 - a. Never
 - b. Once in a month
 - c. Once every 2 weeks
 - d. Once a week
 - e. Most of the time
8. If you ask to be taken off early, how much of your treatment do you normally miss?
 - a. Don't come off early
 - b. Less than 5 min

- c. Between 5 and 15 min
 - d. Between 15 and 30 min
 - e. More than 30 min
9. If you run out of medication, typically how long does it take for you to get a refill?
- a. Never run out
 - b. Less than 1 day
 - c. Between 2 and 3 days
 - d. Longer than 3 days
10. How would you rate your knowledge of the renal diet?
- a. Excellent
 - b. Good
 - c. Fair
 - d. Poor
11. Among the things people see as influencing their health (such as genetics, prayer or God, and luck), one is their own behavior. How important do you think your own behavior is in helping you maintain your health?
- a. Very important
 - b. Somewhat important
 - c. Somewhat unimportant
 - d. Not important at all
12. What strategy do you tend to use *more* when dealing with your dialysis regimen?
- a. I respond to symptoms (cramping due to removal of excess fluid, not feeling well if my phosphorous and potassium numbers are high)
 - b. I set limits on behavior (have 24-h limits for fluid, limit phosphorous and potassium intake)
13. People tend to get frustrated when problems present themselves. How tolerant are you when faced with difficult situations?
- a. Highly tolerant
 - b. Somewhat tolerant
 - c. Get somewhat frustrated
 - d. Easily frustrated

14. How comfortable do you feel asking the nephrologist(s) about

	Very Comfortable	Comfortable	Somewhat Comfortable	Somewhat Uncomfortable	Very Uncomfortable
Medications	1	2	3	4	5
Treatment length	1	2	3	4	5
Medical procedures	1	2	3	4	5
How you are feeling	1	2	3	4	5
Something you think is wrong	1	2	3	4	5

15. When you don't understand something, how often do you push for more information?

- Rarely
- Sometimes
- Often
- All the time

Now I'll ask you some questions about your background:

16. How old are you?

17. What is your sex?

- Female
- Male

18. Do you smoke?

- Yes
- No

19. What is your ethnic background?

- Hispanic
- Black
- White
- Asian
- Other _____

20. How much education have you completed?

- Did not finish high school
- High school diploma
- Two-year college degree

- d. Four-year college degree
 - e. Advanced degree (Masters, PhD, MD, Law degree)
21. What is your living situation?
- a. Live with spouse/significant other
 - b. Live with spouse and children
 - c. Have roommate(s)
 - d. Live alone
 - e. Live with parents
22. How satisfied are you with life in general?
- a. Very satisfied
 - b. Somewhat satisfied
 - c. Somewhat dissatisfied
 - d. Very dissatisfied
23. How satisfied are you with your family relationships?
- a. Excellent
 - b. Good
 - c. Fair
 - d. Poor
 - e. I don't have a family

SECTION IV
PROVIDERS, FACILITIES AND
HEALTH DISPARITIES

DISTINGUISHING QUALITY OF NURSING FACILITY LONG-TERM CARE FROM STRINGENCY OF ENFORCEMENT

Charles Lockhart, Kristin Klopfenstein and
Jean Giles-Sims

ABSTRACT

Nursing facility inspections routinely produce statistics revealing sharp disparities in care at both the facility and the state level. But whether high rates of deficiencies are more indicative of stringent enforcement of standards, leading to improved care, or ongoing poor quality care remains unclear. Until this question is answered, families of nursing facility residents, responsible public officials and interested professionals, are all unable to make sound decisions about long-term care quality. We employ cross-sectional, panel data to compare states on multiple indices of both care quality and enforcement stringency. We use the multi-method-multi-trait approach to distinguish these concepts. We find that low rates of deficiencies are positively associated with independent measures of high quality care. But, a prominent nursing facility enforcement index likely

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 213–234
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027012**

registers poor quality care more than stringency of enforcement since it is associated positively with independent indices of poor quality care and negatively with independent measures of enforcement. Attentive publics can have reasonable confidence that low rates of deficiencies indicate high quality care. High rates tend to reflect glaring deterioration in care quality. They are less signals of stringent enforcement than of obviously poor care which prompts more visible enforcement activities. Sadly, there is little evidence suggesting that these enforcement measures improve state-level care quality and thus reduce cross-state disparities in the quality of nursing facility long-term care. However, at least some of the factors responsible for sharp disparities in nursing facility care lie within the capacity of states to rectify even in the short term.

A recent article in the *New York Times* (Pear, 2008) explains that a new government report indicates that more than 90 percent of American nursing facilities approved for Medicare and/or Medicaid payments violated federal health and safety standards in 2007.¹ The report reveals that deficiency rates (the proportion of nursing facilities cited for violations) vary widely among the states from 76 percent in Rhode Island to 100 percent in Alaska, Idaho, and Wyoming. The average number of deficiencies per nursing facility differs sharply too, from 2.2 in Rhode Island to 13.3 in Delaware. This situation, widespread deficiencies and sharp cross-state variations, is neither new nor – as we shall see – terribly surprising. It is, however, troubling, not only because of what it appears to mean – namely, that most nursing facility residents are at considerable risk of deficiencies in their care – but as well because what these statistics actually do mean is uncertain. Indeed, experts draw diametrically opposed conclusions from these data. So, while it is likely that great disparities in care are commonplace among the nation's nursing facility residents, there is disagreement as to which residents are more at risk and which less. This collective uncertainty means that the families of nursing facility residents, public officials associated with Medicaid which pays for and regulates most nursing facility long-term care, and interested professionals are all unable to make credible judgments about care quality. In this paper we address whether high rates of nursing facility deficiencies, derived from the Centers for Medicare and Medicaid Services (CMS) On-Line Survey, Certification, and Reporting (OSCAR) system, are more indicative of stringent enforcement – suggesting improvement in future care – as Harrington, Mullan, and Carrillo (2004) contend, or of ongoing poor quality care.

INTRODUCTION

For a quarter century, acquiring the capacity for accurately assessing the quality of nursing facility long-term care has been a concern shared by various health care professionals, the federal and state officials who pay the roughly \$111 billion which supports nearly two-thirds of the over 1.3 million largely elderly residents, and the families of residents who use these services (Harrington, Carrillo, & Mercado-Scott, 2005). Across this quarter century, considerable effort has been invested in developing measures of nursing facility quality (e.g., Berg et al., 2002; Harris & Clauser, 2002; Karon, Sainfort, & Zimmerman, 1999; Manard, 2002; Matthews-Martin, Gruhn, & Decker, 2003; Zimmerman et al., 1995).

Yet reliability and validity issues continue to plague these measures at both the facility and the state levels. For instance, individual indices may vary across time, so a nursing facility's current exemplary capacity for food sanitation may not predict its future performance. Furthermore, at any given time multiple indices routinely reflect different levels of quality. In one state only a small proportion of the nursing facilities may be cited for deficiencies in infection control but a much larger portion may acquire deficiencies on preventing pressure sores; whereas another state may have a much better record on pressure sores but many more lapses for infection control. Under these circumstances, it is difficult for interested professionals and public officials to compare the performance of various facilities or states. It is likely even more challenging for prospective consumers to choose a high-quality nursing facility.

Variation among nursing facilities or states on different quality indices arises from multiple sources. In part, variation reflects actual differences in the quality of state Medicaid nursing facility long-term care program services. These differences arise from various general state characteristics and specific program design features that we discuss later. But there is growing evidence that a considerable portion of the variation across individual nursing facilities and states is attributable to differences in measurement rather than the actual quality of program services (e.g., Angelelli, Mor, Intrator, Feng, & Zinn, 2003; Sangl, Saliba, Gifford, & Hittle, 2005; Schnelle et al., 2004; USGAO, 2005; Wu, Miller, Lapane, Roy, & Mor, 2005).

Variation in measurement results in part from the intricate and demanding nature of the tasks faced by nursing facility staff. They are charged with taking good care of persons who are generally afflicted with serious and chronic physical and/or cognitive limitations. Some of these residents are unable to monitor their own care effectively or even to express

their concerns clearly to staff, and many residents have little community support. Furthermore, nursing facility staff generally work in an environment of conflicting incentives. Minimally for nearly two-thirds of the roughly 15,000 Medicare and Medicaid certified nursing facilities in the United States that are operated on a for-profit basis (Harrington et al., 2005), taking optimal care of their residents competes with the rival objective of rewarding investors. Accordingly, it is unsurprising that nursing facilities apply limited resources to residents' care. As a consequence, staff levels tend toward borderline adequacy, and training is frequently limited. Pay and benefit levels are rarely generous, and staff turnover is often high. In such an environment, it is difficult for staff to make astute judgments about how to distribute limited available resources optimally across the needs of multiple residents. We also ask a great deal when we expect any intermittent, sample-based and routinized scheme of inspections to accurately assess staff members' accomplishments in these regards.

So, state and, less prominently, federal inspection teams have demanding tasks too. Personnel are often insufficient in number, and despite working pursuant to federal (CMS) guidelines, their training varies widely both across and within states. Some teams also face a cultural environment of pervasive hostility to public regulation that tends to dampen professional morale, benefits and attitudes. Furthermore, team members, similarly to nursing facility staff, are frequently torn between rival objectives such as a consultant role of guiding nursing facility staff toward improved ways of accomplishing certain tasks versus a punitive role of labeling nursing facilities deficient and thus vulnerable to penalties for failing to achieve certain standards of care.

Thus for reasons associated with both nursing facilities and inspection teams, measurement of nursing facility quality varies sharply both among the facilities within each state and also across states. Assessing the degree to which intra-state or interstate variation in nursing facility quality indices arises from actual disparities in quality as opposed to differences in the calibration and application of measurement is a challenging task. Realistically, indices of nursing facility care quality are unlikely to be devoid of measurement error. Most indices of nursing facility quality of care pick up related concepts, such as stringency of enforcing nursing facility standards, in addition to random error. For instance, surveys of two nursing facilities, in distant sections of a large state served by different inspection teams, which reveal divergent performance on preserving resident dignity are probably each picking up aspects of care quality, enforcement stringency, and other, less clearly identifiable factors in different proportions.

But despite all the work that has gone into the development and application of quality indicators, it is difficult to be certain what these proportions are. Do low state rates of deficiencies on accident prevention indicate high quality care (on this criterion, at least) and only traces of lax enforcement or do these rates indicate serious enforcement oversights coupled with highly questionable care quality care? What about high state rates of various deficiencies? Do they register primarily stringent enforcement activity, likely leading to near-term increases in care quality, or are they more a sign of poor quality care, care so poor that the assignment of deficiencies can hardly be said to indicate stringent enforcement? Experts disagree on these and related questions.

Although critics are abundant, conventional practice has tended to honor the extensive efforts that have gone into developing and applying the OSCAR and related Minimum Data Set (MDS) measures of nursing facility quality so that low levels of deficiencies and other problems have denoted high quality care (e.g., Grabowski, 2001; Hillmer, Wodchis, Gill, Anderson, & Rochon, 2005; Weech-Maldonado, Shea, & Mor, 2006). Although Harrington, Mullan, and Carrillo, among others (Harrington, Woolhandler, Mullan, Carrillo, & Himmelstein, 2001, see also Harrington, Zimmerman, Karon, Robinson, & Beutel, 2000) have employed OSCAR deficiency data in this way, they have recently highlighted the questions in the previous paragraph by offering the interpretation that high rates of deficiencies indicate something encouraging: stringent enforcement of CMS nursing facility standards (Harrington et al., 2004).

These two interpretations unfortunately create a dilemma for attentive publics: both high *and* low rates of nursing facility deficiencies are alleged to be indicative of valued outcomes, stringent enforcement of CMS nursing facility standards – which presumably offers the promise of better quality care in the near future – and current high quality care, respectively. So should prospective customers, responsible public officials, and interested professionals be pleased by high or low rates of deficiencies? This represents a central issue for this chapter.

METHODS

We develop and examine relations among ten state-level indices in an effort to determine the relative degree to which each embodies two concepts or variables: nursing facility care quality and stringency of enforcing nursing facility standards. As the problems we have already mentioned with regard

to OSCAR and similar data suggest, greater clarity is possible on this issue, but definitive answers are not. Indeed some of the other data on which we draw may be as problematic as those from OSCAR. But even if the best data currently available were better, it would be unrealistic to imagine that any of our operational measures for these concepts was devoid of measurement error. Nearly any imaginable operational index for high-quality nursing facility care will almost surely contain elements of lax enforcement as well, and the measure we borrow from [Harrington et al. \(2004\)](#) picks up, as we show, significant aspects of poor quality nursing facility care in addition to enforcement stringency.

Our strategy for sorting out indicators for these concepts is based on [Campbell and Fiske's \(1959\)](#) multi-method–multi-trait method of convergent and discriminant validation. The basic idea here is that distinct measures of one concept will converge, but that measures of different – even related – concepts will diverge. We develop multiple, distinct indices for high-quality and low-quality nursing facility care and for the stringency of enforcing nursing facility standards. Then we look for three patterns of relations among our indicators. First, distinct indices of each individual concept (e.g., high quality nursing facility care) ought to converge (correlate positively). Second, independent indices for the opposite ends of a continuous concept (i.e., high to poor quality nursing facility care) ought to diverge (correlate negatively). Third, multiple indices of distinct concepts (i.e., nursing facility care quality and enforcement stringency) should reveal correlations whose absolute values are less than those among distinct indices for any individual concept and those for opposite ends of a continuous concept. The results of this process are highly suggestive but generally short of definitive.

Our data are drawn from the 48 contiguous states, and for eight of the ten indices they cover the years 1999, 2001, and 2003. Two measures are available for only a single year. (See indices 4 and 5 in [Table 1](#)) Furthermore, we do not seek in this chapter to engage in a couple of prominent health policy analysis objectives: explaining policy character (i.e., generosity or quality – [Berry & Berry, 1999](#)) or the nature of the policy formulation process ([Blomquist, 1999](#)). Additionally, our focus is selective in that we do not have a sufficient panel dimension to our data to examine whether stringent enforcement of nursing facility standards resembles the dictum: “where traffic laws are enforced, deaths go down,” in terms of better enforcement gradually producing improved care. According to [Miller and Mor \(2008\)](#), there is currently no reason to believe that states with high rates of nursing facility deficiencies make anything resembling rapid progress toward

Table 1. Summary Statistics.

Index Description, Source, and Year(s)	Mean	Standard Deviation	Minimum	Maximum
1) State Medicaid nursing facility resource support scale: Authors' scale ($\alpha = .79$) involving the added z-scores for the: number of state Medicaid-certified nursing facility beds/1,000 65+ state residents; percentage of state Medicaid expenditures devoted to nursing facilities; state Medicaid nursing facility expenditures (adjusted for state cost of living)/1,000 65+ state residents. Harrington et al., T3 (2005); USDC (various years); USDHHS, T110 (2001, 2003, 2005); Berry, Fording, and Hanson (2000 updated through 2003 via ICPSR). Data are for 1999, 2001, and 2003	0	2.52	-5.04	8.49
2) Quality of state nursing facility processes scale: Authors' scale ($\alpha = .78$) involving the added z-scores for the percentage of state nursing facilities without deficiencies with respect to: reserving resident dignity, food sanitation, residents' accidents, and housekeeping. Harrington et al., T36 (2005), T35 (2002) and T36 (2001). Data are for 1999, 2001, and 2003	0	3.10	-9.63	5.85
3) State nursing facility residents' quality of life outcomes scale: Authors' scale ($\alpha = .83$) involving the added z-scores for the percentage of state nursing facility residents who avoid: pressure sores, being restrained, being bedfast and "eating" through a feeding tube. Harrington et al., T18, T15, T14 and T21 (2005). Data are for 1999, 2001, and 2003	0	3.25	-9.02	5.81
4) Harrington, Mullan, and Carrillo's (2004) state stringency of nursing facility enforcement index. Data are for 1999 only	24.28	10.62	4.9	42.7
5) State number of formal nursing facility complaints/nursing facility. Houser, Fox-Grage, and Gibson, R25 (2006). Data are for 2005 only, coded as "2003"	2.29	1.34	0	7
6) State number of nursing facility ombudsman complaints/nursing facility bed. www.aoa.gov/ >search "ombudsman">click on entry #5 "national and state data" > T-A3. Data are for 1999, 2001, and 2003	.163	.292	.010	2.34

Table 1. (Continued)

Index Description, Source, and Year(s)	Mean	Standard Deviation	Minimum	Maximum
7) State Medicaid survey and certification expenditures (adjusted for state cost of living)/1,000 65+ state residents. Courtesy of Bary Slovikosky at CMS; Berry, Fording, and Hanson (1998 updated as in 1 above) ; USDC (various years) . Data are for 1999, 2001, and 2003	4394.78	2375.06	1244	14869
8) State nursing facility ombudsman expenditures (adjusted for state cost of living)/1,000 65+ state residents. www.aoa.gov/ >follow path in 6 above to T-A9; Berry, Fording, & Hanson (2000 updated as in 1 above) ; USDC (various years) . Data are for 1999, 2001, and 2003	2095.64	969.03	485	4777
9) State nursing facility ombudsman paid program staff/1,000 65+ state residents. www.aoa.gov/ >follow path in 6 above to T-A8; USDC (various years) . Data are for 1999, 2001, and 2003	.038	.020	.005	.131
10) Percentage of state ombudsman nursing facility complaints resolved satisfactorily. www.aoa.gov/ > follow path in 6 above to T-A5. Data are for 1999, 2001, and 2003	.58	.14	.178	.959

high-quality nursing facility care, but the panel period of our data is too short to test this thesis. It serves instead to increase the number of cases and thus raise confidence in our limited conclusions.

VARIABLES

High-Quality State Medicaid Nursing Facility Program Care Variables

Following [Donabedian \(2003\)](#) our first three measures are indices of the structural, process, and outcome quality of states' Medicaid nursing facility long-term care policies. We adopt this state policy focus, which produces a broader conception of structural quality than Donabedian's, because Medicaid programs are the primary funders and – pursuant to federal guidelines – regulators of nursing facility care within the states.² Our

procedural measure rests on OSCAR deficiency data, but the structural and outcome measures do not. So, strong positive correlations between our procedural quality measure (which rises as deficiencies fall) and our structural and outcome indices would help to validate low rates of deficiencies as indicative of high-quality care.

Relative data availability allows us to address a problem that we mentioned in the introduction: namely, individual indicators of nursing facility quality tend to vary a good deal. We compensate for this tendency by building multi-item scales for each of the three high quality nursing facility care variables. Although our scales still provide incomplete operationalization of these three quality concepts, they are more extensive and adequate than any of the individual scale elements. Diagnostic tests that we have performed support the appropriateness of relying on these multi-item scales rather than on the individual items.³

1) *Structural quality.* Our state Medicaid nursing facility resource support scale ($\alpha = .79$) is formed from the added z-scores (to achieve a common metric) of three elements: the number of state Medicaid-certified nursing facility beds per 1,000 state residents 65 or older, the percentage of state Medicaid expenditures devoted to nursing facilities, and state Medicaid nursing facility expenditures (adjusted for state cost of living) per 1,000 state residents 65 or older. Although resource support comprises only part of what Donabedian (2003) conceives as structural health care quality, these three elements provide indices of the breadth (the beds element) or depth (the percentage element) or both (the expenditures per older state resident element) of a state Medicaid program's resource support of nursing facility care. Most Americans who reside in nursing facilities have Medicaid as their primary payor, so – in effect – nursing facility care has become a state-level public social program benefit. The breadth and depth of a state Medicaid program's support of nursing facility care are thus central structural quality components of nursing facility care in the state.⁴

2) *Process quality.* Our quality of state nursing facility processes scale ($\alpha = .78$) is formed from the added z-scores of four elements drawn from CMS OSCAR data: the percentage of state nursing facilities *without* deficiencies with respect to preserving resident dignity, food sanitation, residents' accidents, and housekeeping. Although nursing facility long-term care has medical components, the recipients are referred to as residents rather than patients for a reason. They reside in the facility, generally until their death. For many of them, food sanitation and housekeeping are as important as the more technical aspects of their care.

3) *Outcome quality*. Our state nursing facility residents' quality of life outcomes scale ($\alpha = .83$) is formed from the added z-scores of four elements: the percentage of state nursing facility residents who *avoid* pressure sores, being restrained, being bedfast and "eating" through a feeding tube. These data are not residents' responses to surveys, but rather official assessments of the proportions of a state's nursing facility residents experiencing certain undesirable conditions. This scale also comes from OSCAR data, although it involves a different subject matter than variable 2 above (i.e., resident conditions rather than nursing facility process deficiencies) and is focused as well on different specific categories of activity (e.g., enduring restraint rather than enjoying sanitary food). So we see it as having independence from our process scale. Furthermore, determining whether nursing facility residents rely on a feeding tube is a more straightforward matter than assessing whether a nursing facility is sufficiently preserving resident dignity. Thus the former is less prone to inadvertent error than the latter.⁵

Poor Quality State Medicaid Nursing Facility Program Care Variables

We contend that the next three indices are primarily measures of the end of the nursing facility quality continuum opposite the three high quality indices above. Measures independent of those above for this opposite end of the continuum are less widely available, so our efforts here are exploratory. Two of these poor quality measures involve the frequency of complaints about care. Although many factors surely influence complaint levels, across large state populations, it is reasonable to imagine that the relative rate is associated with quality of care problems.

4) *Harrington, Mullan, and Carrillo's (2004) index*. This is a five-item index which Harrington, Mullan, and Carrillo contend measures the stringency of state nursing facility enforcement. Four of the five elements involve high state rates of various nursing facility OSCAR deficiencies (for matters distinct from those on which our process quality scale – index 2 above – draws) that are interpreted as indicating stringent enforcement: i.e., the state average number of deficiencies per facility, the percentage of state facilities cited for deficiencies, the percentage of state facilities cited for deficiencies causing harm or jeopardy, and the percentage of state facilities cited for deficiencies resulting in substandard care. The fifth item registers the level at which civil monetary penalties (CMPs) are employed in a state to sanction particularly troubling deficiencies. This index is available only for 1999. We think that this index combines two variables: 1) poor quality

nursing facility care – since four of the five elements appear to be measures of glaringly poor care and 2) the relative frequency of employing a highly visible enforcement option. As we discuss later, these two elements may coincide.

5) *The number of formal nursing facility complaints per state nursing facility.* These complaints are “formal” in that they are made to and work their way up through the Medicaid survey and certification agencies of the state and/or federal governments. These complaints are, among other things, burdened by elaborate procedural safeguards which, in effect, protect service providers and public officials at the expense of nursing facility residents. Thus, these complaints rarely lead to civil monetary penalties on providers or other formal penalties that state and federal Medicaid officials have available to them, such as denying Medicaid payments for new admissions until deficiencies are rectified. This variable is available to us only for 2005 (but is coded as 2003 for use with 2003 data in this study).

6) *The number of nursing facility complaints made to a state’s long-term care ombudsman per state nursing facility bed.* The Older Americans Act requires states to have a long-term care ombudsman. Their offices are overseen by the Administration on Aging (AoA) in the Department of Health and Human Services. Complaints made to state long-term care ombudsmen are generally processed through informal persuasion and negotiation. Some may eventually be transformed into the formal complaints in index 5. In contrast to the complaints associated with index 5, there is a good chance that something positive from the complainant’s perspective will be done about complaints to state ombudsman offices.

*State Enforcement Stringency of CMS Nursing
Facility Standards Variables*

We see the next four indices primarily as measures embodying various aspects of enforcement stringency. We think that enforcement stringency should have some – not necessarily strong – positive relationship with high-quality nursing facility long-term care. But [Harrington et al. \(2004\)](#) think that clear indices of care problems should correlate positively with indicators of stringent enforcement. Even if this latter correlation exists, we think that it arises from the near invisibility of enforcement activities across much of the quality continuum. The activities of state long-term care ombudsmen, for instance, do not appear in Harrington, Mullan, and

Carrillo's data. In our view, more formal types of enforcement may become visible only when nursing facility conditions are seriously deficient and attract more easily discernible enforcement actions such as CMPs.

7) *State Medicaid survey and certification expenditures (adjusted for state cost of living) per 1,000 state residents 65 or older.* We assume that enforcement stringency is a positive though imperfect function of survey and certification expenditures per state resident 65 or older. Unfortunately, states' reporting requirements to CMS create a general category of survey and certification activities that include, not only nursing facilities, but also the less numerous skilled nursing facilities (SNF – e.g., associated with Medicare – rather than Medicaid – for recuperation and/or rehabilitation after hospital surgery) and intermediate-care facilities (ICF/MR – not devoted to older citizens but rather persons disabled by serious physical or cognitive injuries or abnormalities). Consequently, this variable is not focused solely on nursing facilities.

8) *State long-term care ombudsman expenditures (adjusted for state cost of living) per 1,000 state residents 65 or older.* The rationale here is similar to that for measure 7. This index has the limitation that state long-term care ombudsmen deal, not only with nursing facilities, but also with less institutional congregate residential facilities for the elderly, commonly called “residential care facilities.” Data reported to AoA do not break expenditures down so as to reveal what proportion supports work with nursing facility residents.

9) *State long-term care ombudsman paid program staff per 1,000 state residents 65 or older.* Enforcement also requires “enforcers”; thus as ombudsman staff increase, so too should the stringency of enforcement. But this assumption requires a couple of caveats. First, as with measure 8, these staff work with the residents of both nursing facilities and residential care facilities. Second, states vary in the degree to which they augment paid program staff with volunteers and also in the extent to which these volunteers are “certified” (i.e., have been through modest training programs). We have no credible basis for equating volunteer numbers in these two categories with full-time equivalent positions, so our measure focuses on the number of full-time equivalent paid program staff.

10) *The percentage of state long-term care ombudsman nursing facility complaints that are resolved satisfactorily from the perspective of the resident or other complainant.* This appears on its face to be the clearest “enforcement” measure among the four we currently employ. As we shall see, its relations with other enforcement measures are disappointing, but it also provides important clues about the relationship between enforcement and quality.

RESULTS

We consider in this section the first nine rows of [Table 2](#). We take up the tenth row in the subsequent discussion section. We consider first the matter of convergence among various indices of each of the concepts. The high quality nursing facility care indices involve the intersection of the columns/rows for variables 1 through 3. They are the three bold coefficients in the upper left-hand corner of [Table 2](#). They inter-correlate positively and statistically significantly in all three instances: at $.37^{***}$, $.37^{***}$, and $.35^{***}$, respectively. The poor quality nursing facility care indices are found in the intersection of the columns/rows for variables 4 through 6. They are the three italic coefficients along the middle of the main diagonal of [Table 2](#). They inter-correlate positively, but only the relationship between the two categories of complaints is statistically significant: at $.22$, $.09$ and $.47^{**}$, respectively. The first three enforcement stringency indices are located at the intersection of the columns/rows for variables 7 through 9. They are the three underlined coefficients just above the lower, right-hand corner of [Table 2](#). They inter-correlate positively, but only the relationship between state ombudsman expenditures and paid program staff is statistically significant: at $.12$, $.10$, and $.81^{***}$ respectively.

Second, we examine divergence between the indices for the high and poor quality ends of the nursing facility care continuum. These are the nine coefficients in the first three columns of the rows for indices 4 through 6. All nine of these relationships diverge (negative correlations), as they should between indicators for high and poor quality care, with five of the nine correlations being statistically significant: $-.42^{**}$, $-.73^{***}$, $-.23$, $-.32^*$, $-.06$, $-.32^*$, $-.35^{***}$, $-.02$, and $-.14$. In particular, the coefficients for measure 4 (the three bold and underlined coefficients in the row for variable 4: $-.42^{**}$, $-.73^{***}$ and $-.23$) indicate pretty clearly that [Harrington, Mullan, and Carrillo's \(2004\)](#) index is not measuring high-quality nursing facility care.

Third, what does [Table 2](#) reveal about the relations among indices for distinct concepts, i.e., high or poor quality nursing facility care on one hand and the stringency of enforcing nursing facility standards on the other? Again, for the moment, we restrict our inquiry to the first three of our enforcement indices, so the coefficients in question are those in the first six columns of the rows for variables 7 through 9. Of the nine coefficients involving high-quality nursing facility care and the stringency of enforcing nursing facility standards (columns 1 through 3 of the rows for variables 7 through 9), seven are positive, but like the two negative coefficients, they are – with one exception – quite low: $.29^*$, $-.06$, $.09$, $.01$, $-.03$, $.07$, $.07$,

Table 2. Simple Pearson Bivariate Correlation Coefficients among Ten Indices.

	1) State Medicaid Nursing Facility Resource Support Scale	2) Quality of State Nursing Facility Processes Scale	3) State Nursing Facility Residents' Quality of Life Outcomes Scale	4) H, M, and C's Stringency of State Nursing Facility Enforcement Index	5) State # of Formal Nursing Facility Complaints/ Nursing Facility	6) State # of Nursing Facility Complaints/ Nursing Facility Bed	7) State Survey and Certification Spending/1,000 65+ State Residents	8) State Ombudsman Spending/1,000 65+ State Residents	9) State Ombudsman Paid Program Staff/1,000 65+ State Residents
2) Quality of state nursing facility processes scale	.37***								
3) State nursing facility residents' quality of life outcomes scale	.37***	.35***							
4) H, M, and C's stringency of state nursing facility enforcement index	-.42**	-.73***	-.23						
5) State # of formal nursing facility complaints/ nursing facility	-.32*	-.06	-.32*	.22					
6) State # of ombudsman nursing facility complaints/ nursing facility bed	-.35***	-.02	-.14	.09	.47**				

7) State survey and certification spending/1,000 65+ state residents ombudsman spending/1,000 65+ state residents	.29**	-.06	.09	.04	-.06	-.11
8) State ombudsman spending/1,000 65+ state residents	.01	-.03	.07	-.13	-.07	.13
9) State ombudsman paid program staff/1,000 65+ state residents	.07	.00	.13	-.12	-.14	.09
10) % of state nursing facility complaints resolved satisfactorily	.11	.07	-.17*	-.30*	.36*	.18*
					-.06	.07
						.81***
						.12
						.10
						.06

Notes: N for indices 4 and 5 = 48. N for all other indices = 144.
 *Significant at <.05; **significant at <.01; ***significant at <.001.

.00, and .13. Relations between high-quality nursing facility care and stringent enforcement of nursing facility standards appear in Table 2 random to barely positive.

Of the nine coefficients involving poor quality nursing facility care and the stringency of enforcing nursing facility standards (columns 4 through 6 of the rows for variables 7 through 9), six of the nine coefficients are negative, and none is even close to being statistically significant: .04, -.06, -.11, -.13, -.07, .13, -.12, -.14, and .09. So in terms of enforcement variables 7 through 9, relations between the stringency of enforcing nursing facility standards and poor quality nursing facility care appear random to barely negative. In particular, the column for variable 4 (the three bold and italic coefficients in the rows for variables 7 through 9: .04, -.13, and -.12) reveals no clear, and certainly no positive, relationship between Harrington, Mullan, and Carrillo's index and other independent measures of enforcement stringency.

DISCUSSION

Limitations

Before discussing the implications of these results, we want to turn our attention once again to certain limitations of this study. These limitations serve as reminders that this study is not definitive. We think that we are using the best data currently available for examining the relationship between nursing facility quality of care and the stringency of enforcing nursing facility standards at the state level. However, as we mentioned earlier, many of our data are not as good as we would like. The OSCAR data that provide the basis for index 2 have been the subject of considerable controversy. It is likely that, were they to be subjected to similar scrutiny, the state ombudsman office data in indices 6 and 8 through 10 would raise related concerns. We have also identified particular limitations with respect to indices 5 and 7 through 9.

Second, using state-level data means that information about intra-state variation is lost. However, we employ state-level data primarily because this study was prompted by Harrington, Mullan, and Carrillo's (2004) contention that high state rates of OSCAR deficiencies denote stringent enforcement of nursing facility standards. This claim creates a quandary for anyone interested in comparing nursing facility long-term care – at either the facility or the state level. Are high or low rates of deficiencies more

encouraging? To compare Harrington, Mullan, and Carrillo's state-level data with other measures, we use comparable state-level measures.

Third, our results are limited to a pattern of correlations, and this raises concerns about a lack of control variables. The primary concern is "risk adjustment" or controlling for the average level of assistance states' nursing facility resident populations require. Accordingly, we adjusted our indices for the state average nursing facility "resident acuity summary score" (Harrington et al., 2005, p. 35). It turns out that using this control raises at least as many questions as it answers. Should it, for instance, be applied to material resource measures (e.g., indices 1 and 8) as well as care process and outcome measures (e.g., indices 2 and 3)? Should it be applied differently for indices of high or low quality care (indices 1 through 6) than for indices of enforcement stringency (indices 7 through 10)? We tried a variety of approaches. None of these various applications had much impact on the structure or level of relationships in [Table 2](#). The pattern in [Table 2](#) is surprisingly robust.

Implications

First, our data extend the empirical basis of the recent report cited by [Pear \(2008\)](#) of significant cross-state disparities amidst an overall depiction of relatively discouraging care among the states. Additionally, our analysis helps the families of prospective and current nursing facility residents, public officials associated with Medicaid's financial support and regulation of nursing facility care, and interested professionals more accurately assess the meaning of various nursing facility indices to reach appropriate conclusions about disparities in quality of care.

In particular, all three sets of relations reported in the previous section – convergence among multiple indices for individual concepts, divergence between multiple indices for the opposing ends of the nursing facility quality of care continuum, and low correlations among the indices for distinct concepts – suggest that [Harrington, Mullan, and Carrillo's \(2004\)](#) index measures primarily poor quality nursing facility care. It is negatively associated with multiple independent measures of high-quality nursing facility care and positively associated with other, independent measures of poor quality care. Furthermore, Harrington, Mullan, and Carrillo's index registers less centrally the enforcement stringency of state nursing facility standards. It is generally negatively associated with other, independent measures of this concept. So, although further analysis, as better data

become available, is needed to confirm our results, it is sensible to conclude provisionally that low levels of nursing facility deficiencies in state-level data are indicative primarily, not exclusively, of high-quality nursing facility care. The obverse also seems reasonable: high levels of nursing facility deficiencies in state-level data are more indicative of poor quality care than of enforcement stringency. These patterns hold for multiple, independent indices of each concept. So, although these results are subject to the limitations above, they are not easily dismissed.

So, how do [Harrington et al. \(2004\)](#) come to associate high levels of nursing facility deficiencies with stringent state enforcement of nursing facility standards? Consider row 10 in [Table 2](#) which involves the percentage of state ombudsman nursing facility complaints that are resolved to the satisfaction of the resident or other complainant. Despite the apparent face validity of this tenth index as a measure of enforcement effectiveness, it does not correlate well with the measures of enforcement stringency in the last three columns of row 10: $-.06$, $.07$, and $.06$, respectively.

Yet, the bottom row coefficients in columns 4, 5 and 6 (*italic and underlined*: $-.30^*$, $.36^*$, and $.18^*$, respectively) are of particular interest. The last and statistically significant coefficient in column 4 ($-.30^*$) strengthens conclusions above by clearly distinguishing Harrington, Mullan, and Carrillo's index from enforcement effectiveness. But the bottom coefficients in columns 5 and 6 ($.36^*$ and $.18^*$, respectively) reveal that, as levels of various types of complaints (indices of poor quality care) rise, the percentage of ombudsman complaints resolved satisfactorily (enforcement) increases concomitantly, and the relationships are statistically significant.

We think that what is going on here is that, as nursing facility quality of care deteriorates, enforcers become more active and visible. This is likely why Harrington, Mullan, and Carrillo's index, composed of four items registering poor quality of nursing facility care and one item indicative of enforcement activity, has a strong alpha (.75). But this does not mean that more active and visible enforcement equals or even leads to high-quality care. The enforcement is active and visible because the quality deficiencies are so obvious. Among the states with the highest deficiencies (deplorable quality conditions), the problems are so glaring that enforcement activities are applied more frequently and have a somewhat easier time demonstrating their merits in the face of bureaucratic impediments.

Overall, inter- and intra-state disparities in nursing facility care quality appear to be quite extensive. Although precise calculations as to how much of the differences in OSCAR and related data are attributable to actual differences in care quality and what proportion arises from variation in

measurement are not currently possible, state-level deficiency rates appear to be a reasonable measure of relative quality of care. Low rates of deficiencies generally mean better quality care; higher rates indicate poorer care. This poor care may be accompanied by relatively greater use of various enforcement mechanisms, but it is not currently appropriate to infer that this indicates strict enforcement; rather it is more likely to signal care quality deficiencies which are simply too extensive to be ignored. Any sharp disparities in indices of medical care quality are alarming, but achieving more even, low, legitimate, cross-state, and inter-facility rates of care deficiencies should be the primary focus of improvement efforts.

These disparities, as we indicated earlier, arise from several general state characteristics as well as a number of specific program design features. Among the former, states' material capacity to support expensive public social programs and the level of citizen need for Medicaid nursing facility long-term care are especially important and are also generally beyond the capacity of state officials to change, particularly in the short term (Lockhart, Giles-Sims, & Klopfenstein, 2008). Thus, impediments stand in the path of states currently offering poor quality nursing facility care emulating some aspects of the Medicaid nursing facility long-term care programs of states that support high quality care.

But at least some of the relevant program design features are more amenable to upgrading in the short term if the political will exists. For instance, state officials can foster a leveling up approach to reducing current cross-state disparities in the quality of nursing facility long-term care by encouraging non-profit sponsorship of nursing facilities (Harrington, Carrillo, & Wellin, 2001; Hillmer et al., 2005) or raising staffing requirements per resident day (Harrington et al., 2000). Furthermore, the federal government could provide additional help by using its survey personnel more thoroughly to train and model best practices for both nursing facility staff and state survey teams. Since the progressive aging of the baby-boom generation portends a sharp increase in the number of persons requiring long-term care, this would be an appropriate time to reduce the current deplorable cross-state disparities in the quality of this service before they plague the final years of an even larger number of older citizens.

NOTES

1. As we write, this report does not appear to be available to the general public. But see also USGAO (2008) as well.

2. Additionally, we follow this state-level focus to facilitate comparison with Harrington, Mullan, and Carrillo's (2004) stringency of state nursing facility enforcement index, which we think is more aptly characterized as a measure of poor quality nursing facility care.

3. These diagnostic tests include: item-scale correlations, principle component analysis, and comparison of regression models for full scales with those of each scale's individual elements.

4. This breadth and depth of existing resources approach, like any other orientation, has limitations. If states emphasize developing nursing facility care, they are apt to slight the development of home and community-based services (HCBS). The latter are both preferred by and likely more appropriate for a number of older persons needing assistance with activities of daily living (ADLs). We focus in this chapter on nursing facility long-term care in part because the data – whatever their limitations – are so much more adequate than for HCBS long-term care (Lockhart, Giles-Sims, & Klopfenstein, 2009).

5. Currently having a low percentage of residents characterized by any of these predicaments can reasonably be considered good. But it is possible to imagine more ideal circumstances in which older persons are maintained in various HCBS venues that offer better community integration far more extensively than today. Were this ideal to evolve into practice, high levels of these four conditions among nursing facility residents might be expected and considered good. These high levels would indicate that nursing facilities were reserved for a narrow slice of seniors whose conditions had deteriorated to a point at which community integration was no longer feasible.

ACKNOWLEDGMENTS

Cathy Coghlan assisted with our data analysis. A number of persons have been extremely helpful in providing data for this study and/or closely related work. We draw on data appearing in works by Charlene Harrington and various coauthors (Helen Carrillo, Cynthia Mercado-Scott, Joseph T. Mullan, Baleen B. Shemirani, and Valerie Wellin) cited later. At the Centers for Medicare and Medicaid, we thank particularly Janet Freeze and also Lori Anderson, Deborah Kidd, and Bary Slovikosky. Gina Flores and Alan Schafer provided necessary data for Arizona.

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HURT RUNNING FROM POLICE? NO CHANCE OF (PAIN) RELIEF: THE SOCIAL CONSTRUCTION OF DESERVING PATIENTS IN EMERGENCY DEPARTMENTS[☆]

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ABSTRACT

Do physician perceptions of patient “deservingness” factor into the decision to prescribe opioid analgesics? Using a data set of 398 physicians randomly selected from the American College of Emergency Physicians (ACEP) membership list, we explore how a range of patient social context variables influence a physician’s decision to prescribe opioids for three conditions: ankle fracture, back pain, and migraine headache. Being hurt running from the police, former and current drug or alcohol use, and frequent emergency room (ER) visits reduce the likelihood of opioid

[☆]An earlier version of this paper was presented at the 2005 Southern Sociological Society meetings (Charlotte, NC), “Constructing Deserving Patients in the Emergency Room: A Sociological Perspective on Abuse Potential and Prescription Decisions.”

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care**
Research in the Sociology of Health Care, Volume 27, 235–261
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027013

prescription. Having a reliable relationship with a primary care provider and being injured in a ladder fall or intramural collegiate basketball game increase the likelihood of opioid prescription. Factor analyses for each of the three conditions reveal two scales: socially stigmatizing characteristics and socially accepted characteristics. Discussion centers on what places people at risk for inadequate pain control. Our work contributes to the expanding literature on social conditions as a fundamental cause of illness.

INTRODUCTION

Nearly 47 million Americans (16% of the population) are currently uninsured and an additional 53 million Americans (almost 18%) are on Medicaid. As these figures continue to climb, Emergency Departments (EDs) play an increasingly important role as part of the nation's health care safety net. The American College of Emergency Physicians (ACEP) reports a 27% rise in ED visits from 89.8 million in 1992 to 114 million in 2003, at a time when the number of EDs decreased by 15%. Hence, the remaining EDs are experiencing dramatic increases in patient volume. EDs are legally mandated to provide care to anyone, regardless of insurance status or ability to pay. In short, all patients are legally "deserving" of care. But for emergency physicians on the front lines of providing medical care for the poor and near poor, are all patients considered to be "deserving" patients? The purpose of this study is to ascertain whether physicians use deservingness as a criterion in deciding how to treat patients.

Underserved and Undeserving?

The lengthy Code of Ethics for Emergency Physicians ([American College of Emergency Physicians, 1997](#)) specifies fair treatment for all persons who rely on the ED for unscheduled, episodic care. This includes the provision of emergency medical treatment not based on gender, age, race, socioeconomic status, sexual orientation, real or perceived gender identity, or cultural background. No patient should ever be abused, demeaned, or given substandard care. However, inadequate pain control has been a focus of attention in both the medical literature and lay press in recent years ([Carmichael, 2007](#); [Ducharme & Barber, 1995](#); [Ducharme, 1994](#); [Gorman,](#)

2001; Rosenberg, 2007), and only 44% of emergency patients rate their pain control as “very good” (Lanser & Gesell, 2001). Furthermore, the evidence suggests that the burden of suffering is not equally distributed. Why not? In particular, why are physicians less likely to prescribe opioid analgesics to certain patients? Moreover, what does a sociological perspective add to our understanding of physician decisions regarding opioids?

Research on physicians’ prescription decisions suggests that greater social distance between physicians and patients leads to more frequent communication difficulties and lower levels of trust (Tamayo-Sarver et al., 2005). If trust in patients is low, then physicians may be less likely to prescribe opioids because they fear patient abuse of drugs or resale in the illegal drug markets (Bendtsen, Hensing, Ebeling, & Schedin, 1999; Joranson, Ryan, Gilson, & Dahl, 2000; Longo, Parran, Johnson, & Kinsey, 2000; Parran, 1997; Turk & Okifuji, 1997). Such fears are legitimate given the current climate in which both investigations of physician prescription practices and physician arrests for crimes related to “diversion” are on the rise (Rosenberg, 2007). In short, physician decisions are shaped within a climate of fear and they are more likely to prescribe opioids to patients they perceive as trustworthy.

A sociological lens offers a different angle and draws our attention back to the 1601 Poor Laws in Elizabethan England, which clearly distinguished between the deserving (those sick, elderly, and unable to work) and the undeserving poor (able-bodied paupers) (Trattner, 1999). The notion of the deserving and undeserving poor has helped define public welfare programs in the United States and is reflected in the rich sociological literature on attitudes or explanations for poverty (Feagin, 1975; Smith & Stone, 1989; Kluegel & Smith, 1981, 1986). The evidence suggests Americans hold a mixture of individualistic (placing responsibility for poverty on the poor themselves), structural (placing blame for poverty on external social and economic forces), and fatalistic (citing factors such as bad luck and illness) explanations, with individualistic explanations dominating. The strongly individualistic bias built into American culture travels along racial, ethnic, and class lines. In short, those in positions of power tend to express individualistic beliefs more strongly than those with less power. White Americans are more likely to blame the poor for their own plight than are Black Americans (Feagin, 1975; Griffin & Oheneba-Sakyi, 1993; Kluegel & Smith, 1986) and Latinos (Hunt, 1996). Also, American middle-class subjects are significantly more individualistic than working class and lower class Americans (Bullock, 1999; Allston & Dean, 1972; Huber & Form, 1973; Smith & Bond, 1999).

Dominant institutions in American society are sites for the reproduction of individualistic ideologies, and medicine is not exempt. As members of a privileged social class, it is not surprising to find that physicians hold individualistic beliefs about the causes of poverty, and will, like other privileged Americans, attempt to distinguish between those who deserve help and those who do not.

In the current medical climate of rising health care costs and administrative and policy constraints, practitioners find themselves in the position of passing judgment on the deservingness of patients or practicing “selective caregiving” (Chirayath, 2007). In particular, evidence suggests that medical practitioners are less disposed to provide certain forms of treatment to patients who make poor health “choices,” including poor diet and use of drugs, cigarettes, and alcohol (Chirayath, 2007; Clark, Shim, Mamo, Fosket, & Fishman, 2003; Giacomini, Cook, Streiner, & Anand, 2001; Hinze, 1993). In this chapter, we examine whether notions of deservingness emerge in the decisions of ER physicians to prescribe opioid analgesics.

Social Control and Pain

Dating from the work of Parsons’ (1951) classic formulation of the sick role, the sociological literature has demonstrated the importance of the medical profession (generally) and physicians (specifically) as agents of social control (Conrad, 1992, 2007; Fox, 1994; Freidson, 1970; Waitzkin, 1989; Zola, 1972). However, while the location of pain between biology and culture lends itself to sociological investigation, our understanding of how the treatment and experience of pain are shaped by a larger sociocultural context has been limited (see Bendelow & Williams, 1995; Encandela, 1993, for exceptions). The now classic studies of the cultural context of pain (Zola, 1966; Zborowski, 1969) focused our attention on how reactions to pain are not simply involuntary and instinctual but take place within a social context. In this chapter, we highlight the importance of patient social context for physician decisions in the treatment of pain. Specifically, we explore how a range of social factors figure into physician decisions about opioid prescription in EDs. A sociological review of the pain management literature reveals the role non-medical factors play in medical decision-making.

Types of Pain

Pain measures range from the *subjective* self-reports of “your pain on a scale of 0–10” to more *objective*, clinical evidence, for example, an X-ray revealing

a fracture. Clinical indicators that lead to diagnostic certainty about the source of pain increase the likelihood of adequate pain control (Tamayo-Sarver, Dawson, Cydulka, Wigton, & Baker, 2004). Research suggests that those with more subjective conditions, such as chronic, nonmalignant pain, are less likely to receive opioids (Turk & Okifuji, 1997). With chronic pain, practitioners sometimes question the authenticity of the patient's pain experience (Kleinman, 1988). Eccleston, Williams, and Rogers (1997) find that the chronic pain sufferer is more apt than the acute pain sufferer to be viewed as worthy of blame, as being responsible for their condition or failing to acquire appropriate medical treatment. In her *NYT Magazine* story, Rosenberg (2007) remarks that misconceptions about pain and pain relief are rampant: "that addiction is inevitable, that pain is harmless, that suffering has redemptive power, that pain medicine is for sissies, that sufferers are just faking" (p. 70).

Provider Characteristics

As noted earlier, those with greater power and elevated status in society are most likely to hold people "responsible" for their own misfortunes, whether economic or medical. As an occupational group with high status and power, is there intra-physician variation on who "deserves" pain control? In general, the literature on how physician characteristics shape patient care reveals the homogenizing effects of medical education. Available data suggests the predictive power of physician characteristics such as race/ethnicity, gender, and age are minimal or nonexistent for prescription decisions (Hinze, Sarver, Chirayath, & Webster, 2005; Tamayo-Sarver et al., 2004). In consequence, our focus is not on how physician characteristics figure into the equation of pain management, but rather how patient characteristics figure into physician perceptions of deservingness.

Patient Characteristics

The sociological triumvirate of race/ethnicity, class, and gender as features that shape social life has been thoroughly investigated by medical researchers and social scientists of health. While gender disparities in medical treatment and decisions are widely documented (e.g., Lorber, 1997; McKinlay, 1996), little evidence suggests that gender factors into prescription decisions for pain control. Green et al. (2003) find that men are more likely to receive optimal pain control for cancer, but Weisse and colleagues (Weisse, Sorum, Sanders, & Syat, 2001; Weisse, Sorum, & Dominguez, 2003) find no evidence that women are treated less aggressively for their pain than are men. Raftery, Smith-Coggins, and Chen (1995) find that women do

get more and stronger drugs but only because they describe more pain, and therefore independent of patient perception of pain, gender is not a significant predictor.

In contrast to the paucity of relevant findings for a link between patient gender and prescription decisions, much recent attention has centered on the persistence of racial/ethnic disparities in pain management (Bonham, 2001; Green et al., 2003; Richardson, Irvin, & Tamayo-Sarver, 2003). In short, racial and ethnic disparities in treatment were found in all settings (i.e., postoperative, ER) and across all types of pain (i.e., acute, cancer, chronic nonmalignant, and experimental) (Green et al., 2003). A five-state study of pain management among cancer patients (with Medicare to include medication costs) shows that among those with daily pain, African Americans were more likely than whites to receive no analgesic (Kaiser Family Foundation, 2003). In EDs, physicians prescribe fewer analgesics for African Americans and Hispanics than for Anglo-Americans, despite similar estimates of pain (Todd, Samaroo, & Hoffman, 1993; Todd, Lee, & Hoffman, 1994; Todd, Deaton, D'Adamo, & Goe, 2000; Tamayo-Sarver, Hinze, Cydulka, & Baker, 2003a, 2003b). Counter evidence exists. Using a sample of Tamayo-Sarver et al.'s 872 emergency physicians (response rate = 53%) and a vignette survey, Tamayo-Sarver et al. (2003a, 2003b) found no racial/ethnic disparity in analgesic prescribing. However, explicitly stating desirable patient characteristics, namely, a high prestige occupation and a strong relationship with a primary care provider, increased prescription of opioid analgesics at discharge for patients with subjective health conditions, namely, migraine and back pain. This study reveals the importance of "desirable" patient characteristics for pain control. These findings support the link between social class and treatment decisions, since those with "desirable" characteristics (a high prestige occupation and strong relationship with a primary care provider) tend to be from higher social classes.

However, studies that include explicit measures of patient social economic status as a factor in physician prescription decisions are rare. We know from other research that patient social class influences a range of medical decisions (Burstin, Lipsitz, & Brennan, 1992). For example, Gaffney and Kee (1995) find that patients deemed "economically inactive" waited twice as long before receiving a coronary angiography compared to "economically active" patients. Social class is notoriously difficult to measure (Mirowsky, Ross, & Reynolds, 2000), and one major criticism of both medical and social scientific research on disparities is the extent to which race and class are confounded. In short, researchers often use race as a proxy for social class (Kawachi, Daniels, & Robinson, 2005).

Finally, research suggests that age of the patient plays an important role in pain management and in physician decisions to prescribe opioids. Studies have found patients who are older are less likely to have their pain adequately managed (Cleeland et al., 1994). More specifically, older patients experience a decreased likelihood of receiving analgesics, morphine, or other strong opiates, (Landi et al., 2001; Bernabei et al., 1998; Jones, Johnson, & McNinch, 1996), as well as encountering longer waiting times for pain medication and lower doses (Jones et al., 1996).

In short, patient characteristics such as race/ethnicity, social class, gender, and age may factor into how physicians decide who deserves pain control. As Waitzkin (1989) makes clear, patient's relationships to work and family are also key to understanding physician treatment. We hypothesize that those social factors reflective of higher status and power for patients will increase the likelihood of adequate pain control. In addition, we expect that physician assessment of patient value in terms of productivity and caretaking will influence prescription decisions. For the purposes of this study, we avoid use of racially explicit vignettes so that we could sidestep the confounded relationship between social class and race. Prior research is clear that higher status individuals, regardless of race/ethnicity, receive preferential treatment and lower status individuals, regardless of race/ethnicity, receive worse treatment.

After determining physicians' self-reported baseline likelihood of prescribing opioids for three common, painful conditions (migraine headache, back pain with sciatica, and ankle fracture), we employ vignettes to examine how different social context items influence physicians' likelihood of prescribing opioids. Next, we conduct exploratory factor analysis (EFA) to determine whether items loaded around a single deservingness concept or whether two or more concepts better describe patterns in the data. Finally, discussion centers on what places people "at risk" for inadequate pain control.

METHODS

Questionnaire

In this study, physicians were provided hypothetical patient scenarios and asked to self-report the likelihood of prescribing opioids. Three painful conditions were selected for study: migraine headache, low back pain, and ankle fracture. These conditions were selected because they encompass a broad spectrum ranging from a condition with clear objective physical

findings and strong indications for opioid analgesic (ankle fracture) to a condition with few objective physical findings, low objective certainty of diagnosis, and equivocal indications for opioid analgesic (migraine headache). A simple clinical vignette was provided containing little clinical information other than the diagnosis itself, and then respondents were asked on a seven-point scale how likely they would be to prescribe an opioid analgesic to the patient based only on this limited information. Response options ranged from -3 (very unlikely) to $+3$ (very likely).

Next, respondents were asked to respond to different information items to assess how self-reported likelihood of prescribing opioids changed with added information. The information items were designed by Tamayo-Sarver, based on his clinical experience, and in conjunction with colleagues from the ED at Case Western Reserve University (Tamayo-Sarver et al., 2004). The baseline scenarios and information items were pilot tested with emergency physicians. The survey was altered based on their suggestions and retested until changes were no longer suggested (a total of 10 interviews).

To reduce potential bias, a balanced block approach was used to assign the order of vignettes. Stata 7.0 insured that an equal number of each possible order was mailed. To reduce potential bias based on the order in which items were asked after the baseline likelihood, we produced five different versions of each vignette by randomly ordering the information items. The different versions were created in equal numbers and then randomly included in the survey packet. All items and scales were examined for item order and vignette order effects, but none were significant after adjusting for multiple comparisons.

Questionnaire items were designed to test aspects of the Rapid Clinical Decisionmaking in Context model (Tamayo-Sarver et al., 2005), namely, issues of communication, patient credibility, presenting complaint, and context. For this study, we eliminate communication and clinical (diagnostic certainty) items to more closely examine the patient context items. From other research and analysis of this data set, we know that clinical indicators leading to diagnostic certainty of pain will increase opioid prescribing. For example, Tamayo-Sarver et al. (2004) reveal the importance of clinical items (e.g., vomiting, severe photophobia, holding head in hands, absent Achilles' reflex, unable to bear weight on ankle) generally increase the likelihood of prescribing. Hence, any questionnaire items of only clinical relevance were excluded to focus primarily on social characteristics of patients. At the end of the vignette portion of the questionnaire, physicians were asked an open-ended question about other factors that would influence the likelihood of prescribing opioids. Those results are reported here.

After the vignette-based questions, physicians answered one page of demographic and practice environment questions so that we could examine how physician race/ethnicity, gender, specialty, year of medical school graduation, and practice environment influenced prescription decisions. Those results are reported elsewhere (Tamayo-Sarver et al., 2004).

Mail Survey

Six hundred and fifty practicing physicians from the ACEP membership list on September 20, 2001, were randomly selected. After receiving approval from the CWRU Institutional Review Board, each selected physician was mailed a cover letter, three one-page vignette-based questions, and a page of demographic and practice environment questions. Included in the initial mailing was a \$2 bill for incentive. Nonresponders received a reminder postcard and persistent nonresponders received a second mailing of the survey.

Data Analytic Strategy

(a) *Selection of items describing social characteristics:* For each of the three painful conditions (migraine headache, low back pain, and ankle fracture), information items were selected from the entire set of items included in the questionnaire that described social characteristics or indicated social context/location (i.e., age, occupation, parental status, drug/alcohol use history, interaction with police). For the full listing of items used in the questionnaire, please refer to Tamayo-Sarver et al. (2004).

(b) *Univariate statistics:* These were analyzed to explore descriptively how physicians' decisions to prescribe opioid analgesics in the ER varied across the three conditions and how the social characteristic items influenced physician's baseline likelihood of prescribing pain medication. Univariate statistics were also analyzed to verify there was adequate variation and the data were normally distributed (i.e., not highly skewed or kurtotic).

(c) *EFA:* EFA were used to determine how many factors or concepts are represented across the group of social characteristic items for each condition. The overall aim in conducting EFA was to determine if only one general concept of patient deservingness/undeservingness was guiding physicians in making decisions about prescribing pain medication or if

items formed two or more concepts tapping different types of social characteristics.

All analyses were conducted using Statistical Package for the Social Sciences (SPSS) Version 12.0. EFA was conducted using principal axis factoring with oblique rotation to allow for correlations between factors. The analysis was done allowing for a maximum of 25 iterations for convergence of a solution. The procedure used to determine how many factors were represented in the group of items involved: (1) forcing one, two, and three factors on the data; (2) comparing the pattern matrices (factor matrix for one-factor solution) and looking for the matrix that was the most interpretable; (3) examining the reproduced correlations to find the solution with relatively the lowest percentage of nonredundant residuals with absolute values greater than 0.05, and with the fewest or no residuals with absolute values greater than .10. Factor loadings considered acceptable were those that were .4 or higher on the primary factor and did not exceed .3 on a secondary factor (for two- and three-factor solutions).

(d) *Reliability analysis*: This was conducted on the items clustering together to form factors to assess the internal consistency of the factors using Cronbach's alpha. For each group of items, the scale if item deleted was requested to determine if reliability would increase or decrease with the exclusion of certain items.

Sample Characteristics

From this random sample of 650 practicing emergency physicians, we received a 63% response rate. Sixteen (2.5%) respondents were no longer practicing, leaving 634 eligible. Of the 634 eligible, 398 (63%) participated, 42 (7%) refused, and 194 (31%) did not respond. Most physicians are male (79%) and white (88%). The median years since graduating from medical school is 18 (range 4–38). Most respondents (54%) have specialty training in emergency medicine, although 23% report training in emergency medicine and additional specialties. The remaining 22% report training in other medical specialties (including internal medicine, surgery, family medicine, and pediatrics). Forty-three percent of our respondents report working in urban hospitals, 40% work in suburban hospitals, and 16% work in rural hospitals. Eighteen percent of the physicians report working at a hospital in the Northeast region of the United States, 26% in the Midwest, 32% in the South, and 26% in the West. Thirty-eight percent report working in a teaching hospital, and the mean annual number of ED visits is 42,793. In

terms of personal opioid use, 31% of our physicians report having used opioids more than once for their own painful conditions, while 43% report using them once, and 25% never (2% use opioids for a chronic condition).

RESULTS

Univariate Statistics

Baseline Likelihood of Prescribing Opioid Analgesics for Each Condition

Findings at the descriptive level reveal physicians are more likely to prescribe opioid analgesics the more objective the condition. From [Table 1](#), note that the baseline likelihood of prescribing an opioid for an ankle fracture is 1.38 compared to 1.23 for a migraine headache and 1.33 for lower back pain. A closer look at the response distribution reveals wide variation for emergency physicians in their likelihood of prescribing. For example, 14% report being very unlikely to prescribe opioids for migraines, while 74% were very likely to prescribe. The standard deviation is widest for migraines and narrower for low back pain and ankle fracture.

Influence of Social Characteristic Items on Likelihood of Prescribing Opioid Analgesics

[Table 2](#) reveals how the social characteristic items influenced physician’s baseline likelihood of prescribing pain medication for each of the three conditions. Items in italics, at the bottom half of the table, are those that increase the likelihood of prescribing. Items toward the top half of the table in non-italics are those that decrease the likelihood of prescribing.

For each of the three conditions, having a good, reliable relationship with a primary care provider is the item that most improves the likelihood of

Table 1. Physicians’ Baseline Likelihood of Prescribing^a Opioid Analgesics for Three Conditions.

Condition	Mean Baseline Likelihood of Prescribing	Standard Deviation	Skewness	Kurtosis
Migraine headache	1.23	1.65	−1.01	.30
Low back pain	1.33	1.55	−.93	.32
Ankle fracture	1.38	1.54	−.92	.42

^aResponses range from −3 (very unlikely to prescribe) to 3 (very likely to prescribe).

Table 2. Mean Influence of Information Items on Physicians' Likelihood of Prescribing^a Opioid Analgesics.

Migraine Headache	Mean	Lower Back Pain	Mean	Ankle Fracture	Mean
1. History of cocaine abuse, last used 3 days ago (N = 384)	-1.33 (SD = 1.11)	1. Seen in ER seven times in the past year for nonspecific painful complaints (N = 387)	-1.36 (SD = 1.02)	1. Has been treated in ER seven times in the past year for nonspecific painful complaints (N = 387)	-1.10 (SD = 1.04)
2. Treated in ER seven times in past year for other nonspecific painful complaints (N = 386)	-1.22 (SD = 1.02)	2. History of cocaine use, last used 3 days ago (N = 386)	-1.23 (SD = 1.12)	2. History of cocaine abuse, has not used in 1 month (N = 388)	-.85 (SD = 1.06)
3. Drinks four to six beers/day, not currently intoxicated (N = 385)	-.62 (SD = .89)	3. Hurt running from the police (N = 384)	-.75 (SD = .97)	3. Drinks four to six rum and cokes/day, not currently intoxicated (N = 386)	-.65 (SD = .93)
4. Recovering cocaine abuser, has not used in 5 years, agreeable to opioid analgesia at this time (N = 387)	-.53 (SD = 1.01)	4. Recovering cocaine abuser, has not used in 5 years, agreeable to opioid analgesia at this time (N = 387)	-.61 (SD = 1.00)	4. Twisted ankle while fleeing the police (N = 388)	-.53 (SD = .93)
5. Recovering alcoholic, has been sober for 5 years (N = 387)	-.35 (SD = .77)	5. Drinks four to six glasses of wine/day, not currently intoxicated (N = 387)	-.56 (SD = .84)	5. Recovering cocaine abuser, has not used in 5 years, agreeable to opioid analgesia at this time (N = 388)	-.47 (SD = .96)
6. Woman with three children and no child care (N = 386)	-.21 (SD = .91)	6. 25 years old (N = 387)	-.04 (SD = .51)	6. Recovering alcoholic, has been sober for 5 years (N = 387)	-.38 (SD = .88)

7. 25 years old (N = 383)	-.03 (SD = .54)	7. Explains that must work (is a waiter) and wants to be able to work without pain as soon as possible (N = 386)	.03 (SD = .90)	7. Explains that works as a cashier and will need something for pain so they can stand at work tomorrow (N = 389)	-.07 (SD = 1.05)
8. 45-year-old woman (N = 387)	.06 (SD = .43)	8. Stay-at-home mother with two teenage children (N = 387)	.04 (SD = .60)	8. 25 years old (N = 386)	-.03 (SD = .55)
9. Works as a nurse practitioner at a nearby clinic (N = 383)	.06 (SD = .76)	9. 45-year-old woman (N = 386)	.08 (SD = .43)	9. Says twisted ankle on a curb while jogging (N = 389)	.16 (SD = .56)
10. Onset was 4 hours earlier at the symphony (N = 388)	.09 (SD = .64)	10. 65 years old (N = 386)	.22 (SD = .78)	10. 65 years old (N = 386)	.19 (SD = .68)
11. 65 years old (N = 387)	.10 (SD = .79)	11. Injured by falling off a 3-foot ladder (N = 385)	.66 (SD = 1.03)	11. Inverted ankle while playing basketball for college intramural team (N = 386)	.22 (SD = .71)
12. Explains that must be at work (retail clothes store) tomorrow (N = 385)	.13 (SD = .78)	12. Has a good reliable relationship with a primary care provider (N = 387)	.69 (SD = .92)	12. Has a good reliable relationship with a primary care provider (N = 388)	.61 (SD = .86)
13. Has a good reliable relationship with a primary care provider (N = 386)	.73 (SD = .98)				

^aResponses range from -3 (much less likely to prescribe) to 3 (much more likely to prescribe).

opioid prescription. In order of importance, other items that increase the likelihood of opioid prescription include “being injured while falling off a 3 foot ladder,” “inverting an ankle while playing basketball for a college intramural team,” “being 65 years old,” “twisting an ankle while jogging,” and “onset of pain 4 hours earlier at symphony.”

In contrast, the item resulting in the greatest reduction of opioid prescription likelihood (most significant for lower back pain and ankle pain, second most significant for migraine pain) is being treated in the ER seven times in the past year for nonspecific, painful complaints. A history of cocaine abuse is next in line for decreasing the likelihood of opioids (most significant for migraine, second most significant for lower back pain and ankle fracture). In order of importance, other items that generally decrease the likelihood of opioid prescription include being hurt running from police (for lower back pain and ankle fracture), being a recovering cocaine abuser (having not used in 5 years), and drinking alcoholic beverages. The latter deserves closer attention. We varied the types of alcohol consumed for each condition. Although the differences are slight, note that drinking four to six rum and cokes per day is the third most important item for decreasing opioid prescription for ankle fracture. For lower back pain, drinking four to six glasses of wine per day is the fifth most important factor. For migraine, four to six beers per day is third most important. In short, there appears to be something less concerning to emergency physicians about white wine than either beer or rum and coke. The final item worth noting is recovering alcoholic (with 5 years sobriety), which is fifth most important for migraine and sixth most important for ankle fracture.

In sum, [Table 2](#) reveals a hierarchy of patient social characteristics influential for opioid prescription. Using the ER as a regular source of care and not having a primary care provider are most influential. Age works to a patient’s advantage; a 65 year old is more likely to get an opioid than a 25 year old. How and where one is injured matters. Being at a symphony, falling off a ladder, and twisting an ankle while jogging or playing intramural basketball increase opioid prescription, while being hurt while running from police decreases opioid prescription. Finally, any kind of current or former use and/or abuse of drugs and alcohol decreases the likelihood of opioids.

Thirty-nine percent of the physicians provided some response to the open-ended question about other clinical factors that influence the prescription of opioids. Even though the open-ended question asked for “clinical factors,” there was a wide range of responses provided by physicians, many of which were social indicators. Some physicians used this space to re-emphasize the

factors listed in the closed-ended portion of the questionnaire, such as reluctance to prescribe opioids to “frequent flyers,” a reference to frequent ED use, patients being released into police custody, or patients who do not follow up with a primary care provider for a chronic condition.

Other physicians provided additional factors that influence their decisions to prescribe opioids. A factor brought up by many physicians was a patient’s appearance and specifically included hygiene, tattoos, body piercings, being unkempt, and evidence of drug use (i.e., track marks). One physician summarized this in saying “general appearance, unkempt, equal more likely to be drug abuser; unemployed, more likely to be drug abuser,” and another listed “non-working street-type person.” Others wrote about their reliance on their ability to read patients when making pain management decisions or as one physician wrote, their “intuitive feeling that a patient is on the level.” Another factor brought up by multiple physicians had nothing to do with the patient, but with the people accompanying them. If a patient was dropped off by a friend, or if friends were around and laughing or joking, this was a disincentive to prescribe opioids, whereas being with a spouse or family member was an incentive.

Exploratory Factor Analysis Results

For factor analysis, all survey items were examined for normal distribution. Seven items were dropped because of univariate non-normal distributions due to a lack of variation and extreme kurtosis. A variable was considered to have extreme kurtosis if the value was close to or above 9.0 (Kline, 1998). Dropped items for migraine are 25 years of age, 45-year-old woman, and onset at symphony. For lower back pain, dropped items are 25 years of age and 45-year-old woman. For ankle fracture, we dropped 25 years of age and twisting ankle while jogging.

Analysis reveals a two-factor solution is the best fit for the data (Table 3). For all three conditions, factor 1 contains items we deem “socially stigmatizing characteristics.” We could term this factor “stimulant use and abuse potential” but note that hurt running from police loads nicely with the drug and alcohol use and abuse. This indicates that physician decisions are based, in part, on whether a patient is viewed as “deserving” adequate pain control. Perhaps, drug and alcohol use and abuse are indicators of deservingness more than indicators of abuse potential. Also note that frequent ER use loads with abuse potential and hurt running from police.

Table 3. Exploratory Factor Analysis Results for Two-Factor Solution.

Condition	Item	Factor 1	Factor 2	
<i>Migraine headache</i> (<i>N</i> = 382)	History of cocaine abuse, last used 3 days ago	.824	-.112	
	Recovering alcoholic, has been sober for 5 years	.687	.165	
	Recovering cocaine abuser, has not used in 5 years, agreeable to opioid analgesia at this time	.669	.110	
	Pearson <i>r</i> factors 1 & 2 = .174	Drinks four to six beers/day, not currently intoxicated	.631	.139
		Treated in ER seven times in past year for other nonspecific painful complaints	.490	
		Explains that must be at work (retail clothes store) tomorrow		.637
		Woman with three children and no child care	.226	.492
		Works as a nurse practitioner at a nearby clinic	.110	.472
		65 years old		.420
		Has a good reliable relationship with a primary care provider	-.201	.378
<i>Lower back pain</i> (<i>N</i> = 388)	History of cocaine abuse, last used 3 days ago	.758		
	Hurt running from the police	.633	-.107	
	Seen in ER seven times in the past year for nonspecific painful complaints	.614		
	Recovering cocaine abuser, has not used in 5 years, agreeable to opioid analgesia at this time	.582		
	Pearson <i>r</i> factors 1 & 2 = -.003	Drinks four to six glasses of wine/ day, not currently intoxicated	.579	.186
Has a good reliable relationship with a primary care provider		-.209	.576	
Injured by falling off a 3-foot ladder			.514	
Stay-at-home mother with two teenage children			.507	
Explains that must work (is a waiter) and wants to be able to work without pain as soon as possible		.195	.504	
65 years old			.486	

Table 3. (Continued)

Condition	Item	Factor 1	Factor 2
<i>Ankle fracture</i> (<i>N</i> = 378)	History of cocaine abuse, has not used in 1 month	.818	-.120
	Recovering cocaine abuser has not used in 5 years, agreeable to opioid analgesia at this time	.733	
	Drinks four to six rum and cokes/day, not currently intoxicated	.666	
Pearson <i>r</i> factors 1 & 2 = .058	Recovering alcoholic, has been sober for 5 years	.618	
	Has been treated in ER seven times in the past year for nonspecific painful complaints	.523	
	Twisted ankle while fleeing the police	.502	
	Inverted ankle while playing basketball for college intramural team		.713
	Has a good reliable relationship with a primary care provider	-.202	.579
	65 years old		.511
	Explains that must be at work (retail clothes store) tomorrow	.243	.416

Notes: (1) Extraction method: principal axis factoring; (2) Rotation method: direct oblimin; (3) factor loadings are sorted by size and loadings smaller than absolute value .10 are not displayed.

For all three conditions, factor 2 contains items we deem “socially accepted characteristics.” Needing to be at work loads on this factor. Being 65 years of age loads on this factor, as does having a good reliable relationship with a primary care provider and twisting an ankle while playing intramural basketball. Only one item was dropped due to poor factor loading; for migraine headache, having a good reliable relationship with a primary care provider loaded at .378 (acceptable factor loading in EFA is .4 or higher; Kerlinger, 1979).

Reliability Analyses

Table 4 reveals that the Cronbach’s alphas for the stigma characteristics scales for the three conditions were similar and close to .8 for each

Table 4. Internal Consistency/Reliability of Scales (Cronbach's Alpha) and Mean Influence on Prescribing.

Scale	Migraine Headache	Lower Back Pain	Ankle Fracture
Influence of <i>socially stigmatized</i> characteristics on physician pain medication decisions	Alpha = .79 (5 items) Mean = -.81 (SD = .71)	Alpha = .77 (5 items) Mean = -.90 (SD = .71)	Alpha = .80 (6 items) Mean = -.66 (SD = .57)
Influence of <i>socially accepted</i> characteristics on physician pain medication decisions	Alpha = .62 (4 items) Mean = .02 (SD = .55)	Alpha = .63 (5 items) Mean = .33 (SD = .54)	Alpha = .62 (4 items) Mean = .24 (SD = .57)

condition, a level of internal consistency deemed acceptable by Anastasi and Urbina (1997). As noted above, "hurt running from police" and frequent ER use load with drug use and abuse items. The alpha shows high internal consistency between all items, lending support to the argument that the underlying factor is more about deservingness than guarding against drug abuse. The Cronbach's alphas for the acceptable characteristics scales were a little bit lower and consistently around .62 or .63. For each scale, we tested reliability by deleting individual items, and alphas increased only slightly (from .79 to .80 for migraine if item 2 was deleted from the stigma scale and from .62 to .63 if item 7 was deleted from the acceptable scale). In neither case does the minor increase justify dropping an item from the scale.

The goal of these analyses was not to develop a universal set of items that reliably tap socially stigmatizing and accepted characteristics across the three medical conditions. This might have served useful but was not possible due to variations in some of the items' wording across medical conditions that may have different social meanings (i.e., migraine item no. 3: drinks four to six beers/day; back pain item no. 5: drinks four to six glasses of wine/day; and ankle fracture item no. 3: drinks four to six rum and cokes/day). Also, due to this reason, we are cautious about comparisons across the three medical conditions between items that did and did not have ideal loadings.

DISCUSSION

ED physicians are on the front lines of serving the poor and underserved. Yet, not all those who are underserved are seen as deserving of care.

Medicine is practiced within a moral context, and physicians are not exempt from dominant cultural ideologies that blame the poor for their plight and deem them unworthy of medical resources. While ED physicians are generally more socially liberal or progressive than other physicians, our research suggests that certain patient social characteristics put some patients at risk of suffering in the form of inadequate pain control by ED physicians.

Our major finding, that a hierarchy of patient social factors exerts an influence on prescription decisions, is consistent with the general literature on health care disparities. Factors that work to a patient's advantage include, in order of importance, not using the ER as a regular source of care, having a primary care provider, being older (65 vs. 25), and being injured in a "socially acceptable" manner such as while at the symphony, jogging, or playing intramural basketball. Factors that work to a patient's disadvantage include being hurt running from police, and any kind of current or former use and/or abuse of drugs or alcohol. Also, open-ended responses reveal additional social factors relevant for the decision to prescribe, including hygiene, tattoos, body piercings, and family relationships. In short, factors that indicate higher social class help while those indicating lower social class hurt. These findings raise an important question: are physicians passing judgment on patient deservingness or merely on guard for drug abuse potential?

Emergency physicians often view a history of drug abuse as contraindication of opioids. However, recent research suggests that of former substance users, those who did not abuse opioid therapy were more likely to have a history of alcohol abuse alone or a remote history of polysubstance abuse. They were also more likely to be active members of alcoholics anonymous (AA). Those former substance users who are more recent polysubstance abusers and those with a prior history of oxycodone abuse were more likely to abuse opioids (Dunbar & Katz, 1996).

As noted earlier, closer monitoring of physician prescription decisions have caused physicians to be more cautious. However, our second major finding suggests physician decisions are more about evaluating deservingness than "drug abuse" potential.

Recall that the EFA reveal two separate factors. The first contains several abuse potential items (e.g., history of cocaine abuse, recovering alcoholic) along with frequent ER use and hurt running from police. Frequent ER use may be more indicative of social class status than drug abuse potential, and hurt running from police is something else altogether. Recent attention in the media and scholarly literature to police brutality may contribute to an increase of innocent persons (e.g., youth congregating) running from police.

However, in general, a person caught running from police is considered a criminal (despite the innocent until proven guilty dictum) and perhaps the least deserving of all. In short, the factor loadings suggest that current and prior drug use and/or abuse along with frequent ER use and “hurt running from police” are all connected through a common underlying concept that we have called socially stigmatizing characteristics.

The second factor contains socially accepted characteristics, like needing to be at work, being 65 years of age, having a reliable relationship with a primary care provider, and twisting an ankle while playing intramural basketball. The latter two factors are indicative of higher social status while needing to be at work is consistent with Waitzkin’s contention that “productivity” is socially valued and hence rewarded by physicians. Since previous studies reveal that older patients are less likely to receive adequate pain control, we were initially surprised by the finding that a 65-year-old patient would be more likely to receive an opioid than a 25 year old. However, a closer reading of the literature suggests that it was the oldest old (85+) who received inadequate pain control (Bernabei et al., 1998; Landi et al., 2001). This latter finding is surprising given that non-steroidal anti-inflammatory drugs (NSAIDs) are counterindicated for older people given a higher risk for renal insufficiency.

In summary, beyond sites of pain reported by patients (migraine vs. back pain vs. ankle fracture), the social characteristics of patients come into play as physicians decide whether to prescribe opioids. Some patients are clearly perceived as more deserving than others. Those with higher social status characteristics or “socially acceptable” characteristics are more likely to receive adequate pain control. Furthermore, our evidence suggests that physicians avoid prescribing opioids to current and former substance abusers, in part, because those patients are seen as less deserving than others.

CONCLUSION

Racial and ethnic disparities in health care have garnered much well-deserved attention in recent years. Indeed, Healthy People 2010 has the goal of eliminating health disparities as a national priority. The Institute of Medicine (IOM) report on Unequal Treatment asserts that while the relationship between race or ethnicity and treatment decisions is complex, “providers’ perceptions and attitudes toward patients are influenced by patient race or ethnicity, often in subtle ways” (Smedley, Stith, & Nelson, 2003, p. 11). Our findings suggest that socially acceptable characteristics

increase the likelihood of adequate pain control, while socially stigmatizing characteristics decrease that likelihood. These findings may help shed light on disparities if racial and ethnic minority patients are more likely to hold stigmatizing characteristics. To frame the situation more bluntly, racial and ethnic minority patients are more likely to be low income and hence more likely to hold socially stigmatizing characteristics (e.g., less likely to have a primary care physician, more likely to use the ER as a regular source of care) than are Anglo-American or Euro-American patients. Poor patients in general, a population in which racial and ethnic minorities are over-represented, are less likely to hold socially acceptable characteristics (intramural collegiate basketball, full-time job, symphony attendance).

The drug use and abuse items clearly deserve more attention. Are racial and ethnic minorities more likely to be substance abusers? Not according to the 1998 National Household Survey on Drug Abuse, which reports that 72% of all illicit drug users are white, 15% are black and 10% are Hispanic (Department of Health and Human Services & Substance Abuse and Mental Health Services Administration, 1998). Research by van Ryn and Burke (2000) reveals that white physicians *perceive* black patients as more likely than white patients to be abusing drugs and/or alcohol. If physicians view substance use and abuse as part of what makes certain patients undeserving, and if the poor and/or racial and ethnic minorities are perceived to be more likely to be substance abusers, then patients are denied adequate pain control because of moral judgments on the part of physicians.

A major limitation of our research is that while case vignette methodology can be a powerful tool for studying physician decision-making, it is difficult to know whether vignette evaluations truly represent how decisions about pain control would be made in an actual encounter (Mangione & Reynolds, 2001).

Policy Implications

As the recent 2007 *NYT Magazine* article makes clear, undertreatment for pain may be endemic. The good news is that recent research on racial and ethnic disparities has raised physician awareness of how both “explicit” and “implicit” stereotypes may contribute to unequal treatment for patients (Smedley et al., 2003). However, perhaps physicians need more education along two fronts: (1) the (collective) tendency to see certain kinds of patients as more deserving than others of help and pain relief and (2) the relationship between pain and addiction.

Along the first front, a sociological frame encourages understanding of the larger shift in medical culture toward “blaming the victim” for their disease. The current health maintenance ideology of risk factor epidemiology reflects dominant, individualistic ideologies and focuses on personal behaviors that put individuals “at risk” of poor health. Personal habits, such as cigarette smoking, poor diet, and excessive alcohol consumption, are often separated from their more distal or fundamental roots like social class position and structure. In short, the paradigm in health maintenance and disease prevention has been criticized for attention to proximate causes and has the potential to blame the victim for their disease status (Alonzo, 1993; Chin, Monroe, & Fiscella, 2000; Link & Phelan, 1995; McLeroy, Bibeau, Steckler, & Glanz, 1988). Those patients are viewed as undeserving of care or undeserving of a standard of care available to someone with no risky lifestyle behaviors. As Link and Phelan (1995) make clear, risk factors must be contextualized to figure out what puts people at risk of being at risk for illness. Social characteristics that reflect lower social class backgrounds may put people at risk of being perceived as “undeserving.” Yet, having socially acceptable characteristics is restricted, in part, by position in the larger social class structure.

Along the second front, physicians need more training on links between pain and addiction. Howard Heit, pain and addiction specialist, asks, “If we take the fact that 10% of the population has the disease of addiction, and if we say that pain is the most common presentation to a doctor’s office, please tell me why the interface of pain and addiction is not part of the core curriculum of health care training in the United States?” (Rosenberg, 2007, p. 70). In the same article, another doctor remarks, “pain education is barely on the radar at most medical schools” (p. 70). In particular, physicians would benefit from knowledge of careful research about links between substance use and abuse and opioid abuse. Not all former or current users are at risk for opioid abuse, as the research makes clear. In general, as with cultural sensitivity training, physicians can be taught to guard against their own biases about who deserves care and not automatically tag former or current substance users as undeserving.

As Green et al. (2003) make clear, eliminating racial and ethnic pain disparities requires a comprehensive pain agenda. We argue that this agenda should include close attention to social factors like those explored here, factors that are associated with both social class and race/ethnicity. Furthermore, a sociological frame helps contextualize the social factors, allowing for a fuller understanding of what puts people at risk of suffering.

ACKNOWLEDGMENTS

This study was supported, in part, by the Agency for Healthcare Research and Quality Dissertation grant R03 HS 11948-01, the Center for Healthcare Research and Quality at MetroHealth Medical Center, and the Departments of Epidemiology and Biostatistics and Sociology at Case Western Reserve University.

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SECTION V
LOCALLY ORIENTED STUDIES
IN HEALTH DISPARITIES

EMERGING COMMUNITY APPROACHES FOR ELIMINATING HEALTH DISPARITIES: A PRELIMINARY INVESTIGATION OF COMMONALITIES AND DIFFERENCES

Anne M. Hewitt

ABSTRACT

Purpose – A structured comparison, based on underlying social ecological constructs, provides the framework for this preliminary investigation of the commonalities and differences between three emerging approaches to health disparities: community-based participatory research (CBPR), community-focused health outreach (CFHO), and community health promotion programs (CHPP).

Methodology/approach – A conceptual review and preliminary analysis at the macrolevel of major community trends that focus on eliminating health disparity outcomes.

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 265–275
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027014**

Findings – Each of the three community health approaches share similar purposes using community-focused collaborative efforts, but involve different change agents, levels of partnership, timeframes, social participation, and implementation methodologies.

Research limitations/implications – Additional in-depth literature reviews and meta-evaluations highlighting the contributions of each of the three approaches (CPBR, CFHO, and CHPP) are strongly recommended.

Practical implications – Interested community stakeholders can monitor results and impacts of each of the three approaches within their environments.

Originality/value of paper – Past reviews have concentrated on isolating individual contributing social causes of health disparities. This analysis introduces three emerging trends that currently function within community-based frameworks as potential mechanisms for helping the health disadvantaged.

INTRODUCTION

The issue of health disparities represents one of the conundrums currently facing American health policy makers. Recent reports continue to remind health care research institutions, providers, and legislators that unacceptable and unexplained disparities in health care quality exist (IOM, 2002; AHRQ, 2003). These reports emphasize that health disparities are caused by complex social factors that will require integrated and sustained initiatives to address the myriad of causal factors (Carter-Pokras & Baquet, 2002; DHHS, 2001). As the US government appears reluctant to tackle a national health care system, individual states are responding with tentative steps toward a more balanced system for health care access and payment (KFF, 2007). However, at the national level a concerted effort on improving health quality has revealed that not all health disparities can be explained simply by a lack of health insurance (NCI, 2002; IOM, 2005). Although social justice issues of health care access and availability highlight major impediments to care, recent research is suggesting that certain disadvantaged groups which do receive similar and standard health treatments continue to exhibit poorer health outcomes across diseases and racial background (IOM, 2005; NCLR, 2008). Because of this heightened perspective on improving health care

quality, investigators are focusing on community initiatives as potential solutions to the health disparity dilemma.

The 21st century focus on the community as the crucible for individual and population health initiatives underscores the recognition that health disparities cannot simply be attributed to a lack of access to health insurance or public-supported health care. The social sources of disparities for the disadvantaged are embedded within the individual community. The purpose of this chapter is to provide a structured comparison, based on underlying social ecological constructs, that examines the commonalities and differences between three emerging approaches to eliminate health disparities: community-based participatory research (CBPR), community-focused health outreach (CFHO), and community health promotion programs (CHPP).

BACKGROUND – SOCIAL ECOLOGICAL APPROACHES

The philosophic underpinning for a social ecological approach to community interventions was firmly established more than 25 years ago (Bronfenbrenner, 1979). Today's focus on the community as the crucible for individual/group initiatives underscores the recognition that health behavior research done in a social ecological context can produce valuable knowledge for eliminating health disparities. A complete ecological approach would include identification of all the environmental factors; social, anthropological, physical, economic, and political variables. At a minimum, community health initiatives and subsequent interventions would require collaborators to respect the sociocultural embeddedness of behavior (Trickett, 1997) and to focus on the nature of people's interactions with the environment (Stokols, 1992). This framework supports an inclusive, collaborative approach that can systematically examine multiple levels of influences on behavior within the community. These fundamental assumptions include the following:

- Importance of understanding behavior in sociocultural context and as influenced by multiple levels of the ecological environment.
- Importance of relationship between the interventionist and the setting.
- Importance of prevention interventions to serve the goal of community development (Trickett, 1996, 1997).

This social ecological contextual background provides a framework for examining current community approaches for eliminating health disparities. Primary categories for review include: purpose and goals, partnerships and change agency, intervention methodology (focus, timeframe, priority population), and social participation. Three current approaches emerging as strategies for the elimination of health disparities include: CBPR, CFHO, and CHPP.

COMMUNITY APPROACHES FOR ELIMINATING HEALTH DISPARITIES

Community-Based Participatory Research

Research concentrating on the causal factors of health disparities is often difficult and complex to complete. Standard research protocols may not be applicable in assessing health disparity studies as they are based only on random assignment and lack identification of all ecological environment variables (Goodman, Wandersman, Chinman, Imm, & Morrissey, 1996). Experts have suggested over time that “coupling with the host environment” is an appropriate research process (Trickett, Kelly, & Vincent, 1985). The CBPR model has emerged as an extension of the social ecological framework and helps meet this research challenge (Wallerstein & Duran, 2006). CBPR has been defined as

A collaborative approach to research that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community, has the aim of combining knowledge with action and achieving social change to improve health outcomes and eliminate health disparities. (CCPH, 2008)

CBPR has been referred to as an orientation to research that emphasizes relationships between multiple entities within a community. These relationships affect the social variables such as power, privilege, participation, community consent, and racial and/or ethnic discrimination (Wallerstein & Duran, 2006). CBPR effectively links community intervention research with rigorous investigation protocols based on extensive community participation (Buchanan, Miller, & Wallerstein, 2006). Essential components of CBPR include: (a) Genuine partnerships reflects reciprocal learning (b) Community capacity building as part of the research process, and (c) Long-term commitments with outcomes to benefit all partners (Israel, Schultz,

Parker, & Becker, 1998; Israel, Schulz, Parker, & Becker, 2001; Israel et al., 2003). CBPR has become integral to national health research and is supported by the Centers for Disease Control, Office of Minority Health, National Institutes of Health agency and sub-agencies and other state and foundation organizations (Green, 2003).

Community-Focused Health Outreach

Ecological health frameworks uniformly include economic influences as a subsystem that potentially impacts health behavior via the environment (Bronfenbrenner, 1979; CIN, 2008) and economic influences, such as health care funding for individuals and health service delivery agencies, often appear in health research as indicators for access to care and/or equity of care (Healthy People, 2001; IOM, 2001). The primary example of an economic institution operating within the community is the health insurance/health plan sector which includes federal (Medicaid, Medicare) and private (third party payor) funding. These organizations have the power to impact both individual and community health behavior via access and availability of health services and are essential to eliminate health disparities.

The health plan sector may constitute an even more prominent role in eliminating health disparities. Health service delivery networks are undergoing significant reform as both the public and the government recognizing a need for alternative systems to meet the imminent challenges of chronic disease (Foster-Fishman, Salem, Allen, & Fahrback, 1999; Best et al., 2003). These newer models of care are based on population health management (PHM) strategies which seek to align quality of care improvements while managing costs (McAlearney, 2003). PHM strategies use a segmentation approach that is designed to meet the health needs of a population located within a specific community and outreach is a key implementation component.

PHM strategies and accompanying community interventions can be implemented in a variety of innovative ways and industry reports are validating the benefits of these models of care (Brooks & Szilagyi-Neary, 2007; Butterworth, Perkins, Reed, & Richling, 2007). Examples of the new models of care outreach efforts, applied to the community setting, include: patient navigators, health coaching, medical homes, chronic disease self-management programs, and disease-specific mentoring support groups (Otero-Sabogal, Owens, Canchola, & Tabnak, 2006; Shaw, Gallant, Riley-Jacome, & Spokane, 2006). These models of care often include community health workers (CHW) who are resident community members who work

with the local health care system because they share many of the same life experiences (ethnicity, language, and socioeconomic status) with the community members they serve (US DHHS & HRSA, 2007). Because of their close community linkages and use of indigenous facilitators, these new models of care offered by the health plan sector provide an alternative approach for eliminating health disparities.

Community-Based Health Promotion Programs

A third social ecological approach to eliminate health disparities is community health disease prevention and health promotion programs that are grounded in both social psychology and community psychology tenants. Past health promotion initiatives have traditionally focused on individual health behavior changes (Goodman et al., 1996), but current theorists suggest that a community focus includes individuals, family, groups, and institutions (McLeroy, Bibeau, Steckler, & Glanz, 1988; McLeroy, Seckler, Goodman, & Burdine, 1992). Sallis and Owen (2002) have refined the multilevel intervention approach and provide evidence that the most easily implemented initiatives are by multisectoral groups. The increase in community-based health promotion programs demonstrate that using multisectoral groups within a community offers an opportunity to interact with disadvantaged populations that share disproportionate differences in incidence, prevalence, and mortality burden of disease.

Healthy communities is a national initiative committed to provide support and strategies for local communities to address health disparity issues in the environment, quality of care, health status, and health outcomes (US DHHS, 2001). Successful examples of community efforts and approaches to reduce disparities are frequently documented across the nation (Healthtrust, 2008). A special commitment to eliminate health disparities by many American city mayors has led to an annual US Mayor's Healthy City Summit (Carter, 2008). These healthy community activities parallel the World Health Organization's (WHO) Healthy Cities program which engages local governments to focus systematically on the root causes of health disparities throughout the world (WHO Healthy Cities Programme, 2008). Although these efforts focus on comprehensive strategies to reduce known causes of poor health status, they also include a major emphasis on environmental issues. The impact of addressing health issues primarily through local community efforts with the support of local politicians is another novel approach in reducing disparities in health care.

FINDINGS: COMMONALITIES AND DIFFERENCES IN COMMUNITY-BASED APPROACHES

Using a framework based on a social ecological perspective, three recent macroapproaches (CBPR, CFHO, and CHPP) to reduce or eliminate health disparities in the community were examined. [Table 1](#) presents this preliminary analysis of commonalities and differences.

Each of the three community approaches exhibit similar purposes and community-focused collaborative efforts, but involve noticeably different change agents, levels of partnership, timeframes, social participation and methodologies for eliminating contemporary health disparities. One apparent commonality is an over-all purpose to reduce or eliminate health disparities within a community, but actual goals varied from completion of a required research component to a stated desired impact on disease health outcomes and improving overall quality of life. Each approach also targeted community members as the intervention foci, but the outcomes for the priority population were expressed along a continuum ranging from improving population health, overall community health and total quality of health within the community. Although all three approaches used community collaboration as a foundation strategy, variations occurred in level of collaboration by partnership type, social participation and change agents. The CFHO approach recruited voluntary and/or paid partners most representative of the priority social-cultural community, whereas the community health promotion program (CHPP) approach relied primarily on various key opinion or political leaders and community champions. Apparent differences were also noted among approach methodologies ranging from implementation of rigorous research protocols to more interactive, reciprocal, and problem solving frameworks with both short and longer timeframes. Action strategies also differed among the various approaches corresponding to stated purpose and methodology. Finally, the targeted health outcome included overall social and environmental health issues along with a narrower focus on single or multiple disease issues.

IMPLICATIONS

A preliminary review of three community-based approaches (CBPR, CFHO, and CHPP) designed to help mitigate health disparities revealed both commonalities and differences based on social ecological constructs.

Table 1. Comparison of Community Approaches: Community-Based Participatory Research, Community-Focused Health Outreach and Community Health Promotion Programs.

Type	Community-Based Participatory Research	Community-Focused Health Outreach	Community Health Promotion Programs
Stated purpose	Seeks to eliminate health disparities	Seeks to eliminate disparities in health outcomes	Seeks to eliminate health disparities in community
Stated goal	Research	Improved health care outcomes	Improved health and quality of life
Change agent(s)	University and community resident partnership	Institutional Insurer and Local community facilitators	Public and/or nonprofit agencies with community champions
Partnership type	Collaborative approach mandated	Collaborative approach as protocol	Collaborative approach as best practice
Social participation	Seeks equitable involvement of all	Promotes partnership, not equality	Requires social participation and action
Priority population	Seeks to improve over-all community health	Seeks to improve population health within a community	Seeks to improve quality of health within a community
Methodology/ action strategy	Follows a research methodology with rigorous protocols Implies developing knowledge via research and combining with action	Follows an interactive intervention premise Facilitates knowledge and action with enablers	Follows a problem-solving action protocol Facilitates awareness, knowledge and action
Timeframe	Involves long-term commitments	Involves short- and long-term commitments	Involves short- and long-term commitments
Targeted outcome	Focused on a specific and distinct health or disease issue	Focused on single or multiple disease(s) prevention, treatment, and follow-up	Focused on social and environmental health issues

The emergence of new interactive research protocols, the efforts of the health-funding sector at community outreach, and supportive government health initiatives and champions suggest that innovative responses meeting the social challenges of the disadvantaged can be both diverse and yet, singly

focused in purpose. This analysis has also shown that the role of community partnering can be considered key in developing an overall strategy appropriate for community health interventions regardless of whether the emphasis is on research, changing behavior or enhancing the community environment for quality of life (Best et al., 2003; Stokols, 2006). Together, these three unique community-based approaches ultimately aim to reduce or eliminate health disparities through direct linkage with the community to address the diverse social contributors of health disparities.

This preliminary review presents a macroview and a synthesis based on a conceptual viewpoint grounded in social ecological theory. Other perspectives, targeting specific causal or additional mediating relationships, could provide complementary or differing interpretations of the outlined comparison between the three identified community approaches to eliminate health disparities. In a 1996 article, Stokols suggested that future health research should focus on studies that examined the role of intermediaries (corporate decision-makers and legislatures) in promoting the well-being of others (Stokols, 1996). Recent studies have suggested that social change can be promoted through system processes, labeled second-order change, rather than focusing on individual outcomes (Tseng et al., 2002). If multilevel, multi-sectoral community health interventions continue as a best practice, then CBPR, CFHO, and community-based health promotion programs approaches should provide evidence of reduced or eliminated health disparities.

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EFFECTS OF HOUSEHOLD ASSETS UPON RURAL RESIDENTS' SELF-REPORTED PHYSICAL AND EMOTIONAL WELL-BEING

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ABSTRACT

Information gathered from a sample of residents in four rural Pennsylvania communities is used to test the net effects of household resources (financial assets, supports, and community ties) upon respondents' physical health and emotional well-being. Size and composition of households, types, and extent of insurance coverage, age, and aspects of household liquidity had major net effects upon physical health. Some measures of liquidity, a range of supports, and community ties had net impacts upon emotional well-being. The importance of considering the collective health needs of rural households in relation to their affordability and sustainability is stressed. The public policy implications of our results are discussed.

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 277-300
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027015**

Research increasingly has focused upon and found evidence that supports the net effects of socioeconomic resources upon health (Cockerham, 2007). In particular, previous research has suggested that household assets and unaffordable health care needs play important roles in people being able to maintain good health and emotional well-being (Grimm & Brewster, 2002; Grimm, Brewster, & Smith, 2003; Doss, Smith, Grimm, Theodori, & Luloff, 2005; Smith, Grimm, & Brewster, 2005). Ongoing research comparing metro to nonmetro residence also suggests that socioeconomic factors rather than residential location per se may explain differences in longevity and the ways people deal with their disabilities (Johnson, 2004; Morton, 2004). This chapter focuses upon rural residents to tease out the net effects of marginal resources upon health among people who often have less insurance coverage, who more often have medicaid coverage only, and who are less likely to be covered by private/Health Maintenance Organization (HMO) sources (Hummer, Pacewicz, Wang, & Collins, 2004).

While suggesting the net effects of household resources upon health and emotional well-being differences, previous research has lacked specific measures of such resources. Even when specific types of health problems and emotional distress differences have been included, researchers have not deciphered which, if any, household resources were most important in avoiding the increasingly expensive costs of health maintenance. In this study of rural residents, we assess the net effects of three specific components of household resources upon differences in health and emotional well-being: financial assets, social supports, and community ties. Doing so will help specify among rural residents the extent to which household resources are causal rather than spurious influences upon health and health maintenance. We will be focusing upon resource effects that go beyond general conditions in rural areas that impact health including environmental factors, jobs with fewer benefits, and less insurance coverage (Wallace, Grindeanu, & Cirillo, 2004).

FINANCIAL ASSETS

The increased and ongoing commodification of health insurance and the costs of health care itself involve health maintenance increasingly being affected by the pricing of treatment options. Increased out-of-pocket expenses for patients, the annual renegotiated pricing of private insurance, and decrements in provisions in public programs increasingly determine

what and how many services people use (Kronenfeld, 2001). Pricing has made patient-borne expenses an extremely crucial aspect of decisions about choosing insurance options and receiving the needed care that might, through pricing, be available (Mechanic, 2004). Very few third-party sources provide life-time benefits, and many plans are reducing post-retirement benefits (Sloan, Ng, & Goeschl, 2007).

With respect to rural health, it is especially important to understand how health services differ from most other types of expensive household needs. This issue is important because differences in health by area of residence depend less upon location than upon whether or not people with health care needs can afford, through coverage and household borne costs, the medical services available in their communities as well as the follow-up care performed by local health practitioners linked to more distant health care centers (Wallace et al., 2004). Economies of scale and readily available debt servicing do not apply to health care. Quality health care and treatment, especially for rural residents with major and chronic health care needs, are both complex and costly, with the number of procedures required not being related to reductions in price. As Mechanic (2004) has argued, this often contributes to the limited number of complex treatments chosen or completed. It is also related to the bankruptcy of some households that elected those treatments (Jacoby, Sullivan, & Warren, 2001; Himmelstein, Warren, Thorne, & Woolhandler, 2005). Being able to afford the services available in regional treatment centers in rural areas also impacts mortality rates (Morton, 2004).

The combination of increasing costs, decreased benefits in health plans, rationed treatment options when they are available or affordable, and the tendency for people to forgo unaffordable treatment increases the importance of the household assets available for health care needs. Taylor and Comite (2004) have referred to the lack of such liquidity as triage by inability to pay. Both the number of households without health insurance (estimated at now more than 45 million) and the increasing number of people who cannot afford health screens, continued treatment, and/or prescription medicines indicate that household liquidity is often exceeded by the scope and cost of health care needs (Lutfey & Freese, 2005). Having health insurance and being enrolled in health care plans are no longer sufficient for either maintaining health or dealing with health ailments (Mirowsky & Ross, 1999; Ross & Mirowsky, 2000). These problems especially apply in rural areas where fewer people may have private insurance plans and poverty is often deeper and more entrenched (Hummer et al., 2004).

SUPPORTS

That close ties provide help and motivation for dealing with illness and preserving health is quite clear (Lin, Ye, & Ensel, 1999; Lin, 2001). Family and friends help shape people's health beliefs and health-related lifestyles (Cockerham, 2007). Close others also help shape and support help-seeking behaviors when symptoms of illness and health problems occur (Pescosolido, 1992). As Mechanic (1995) concluded, a key component in healthy living is the effort of family and friends to define symptoms as illness and to call people's attention to indications of health problems so that they are addressed. Rural networks that enhance health care access and usage include those networks among local and more distant providers (primary care physicians and specialists) and those among provider organizations (hospitals, clinics, and rehabilitation centers). Given that many rural residents are both older and have more chronic health care problems these types of networks are crucial for the provision of necessary care (Wellever, 2004). In addition, close others play key roles in providing rural patients assistance in seeking treatment, care for pets and livestock during such times, and other household chores. Families can also combine households (elders moving in with children, or vice versa), allowing the sorts of home health care that enable sick people to avoid ongoing hospitalization or institutional treatment (Chumblor, Grimm, Cody, & Beck, 2003). In any community, the more health care options, the better able people are to recognize and deal with their health care problems (Young, 2004).

COMMUNITY TIES

Research shows that rural residents in counties with communities that have populations between 10,000 and 49,999 (micropolitan areas) have lower morbidity rates than do residents in rural isolated counties and suburban populations adjacent to metropolitan areas (Morton, 2004). Although the reasons for these patterns are not entirely clear, part of the explanation undoubtedly involves community organizations including health care facilities and the more diffuse ties linking households to community groups and other residents. Prior research (Browning & Cagney, 2003; Ross, 2000; Ross & Mirowsky, 2000; Smith et al., 2005; Turner, 2004) has found that people in households with more community ties report higher levels of physical and emotional health. Efforts such as the Appalachian Leadership Initiative on Cancer (ALIC) Project illustrates how rural health care

delivery can and should be linked to community-based groups and local development districts (Gatz, Rowles, & Tyas, 2004).

Social network analysis suggests that dispersed ties help increase the potential resources available to help people deal with their needs, including healthcare (Granovetter, 1973, 2002). Connectivity studies (Gaughan & Ferman, 1987; Nelson & Smith, 1999; Wellman & Frank, 2001) have found support for the idea that households participated in and benefit from such general reciprocity. Conversely, those living in communities or neighborhoods with fewer diffuse ties had lower levels of physical health and emotional well-being (Browning & Cagney, 2003; Hill, Ross, & Angel, 2005; Kirby & Kaneda, 2005; Mirowsky & Ross, 2003; Pearlin, Schieman, Fazio, & Meersman, 2005; Ross, 2000; Wilson, 1990).

Hypotheses

In this study, we assess the potential net effects of household resources on adult rural residents' physical and emotional well-being. In doing so, we control both respondents' demographic characteristics and household composition factors that have implications for health. Following the review of household financial assets, supports, and community ties above, we examine these two hypotheses:

1. Types of household assets will have major positive net effects upon respondents' self-reported physical well-being scores.
2. Types of household assets will have major positive net effects in relation to respondents' self-reported emotional well-being scores.

METHODS

Data

The data employed in this study were collected as part of a larger research project on rural economic development and individual well-being. The selection of study sites began at the county level. Using United States Census of Housing and Population data, each county in the Commonwealth of Pennsylvania was classified with respect to its history of population change for the period 1950–1990. From this empirical classification, two northern tier counties – McKean and Tioga – both of which contained

numerous rural communities were selected. Between 1950 and 1990, Tioga County experienced approximately a 17 percent increase in population. During that same time period, the population in McKean County declined by approximately 14 percent.

The use of 1970–1990 United States Census of Population and Housing data, as well as field observations of each municipality within Tioga and McKean Counties, aided in the identification and selection of sites at the community level. Four sites – two in each county – were selected to represent a typology of recent economic performance (i.e., growth or decline) and availability of health and social services (dichotomized as high availability of services and low availability of services). This facilitated comparisons among sites with differing levels of recent economic performance and availability of health and social services.

The four sites selected included a central place and an aggregate of several contiguous surrounding municipalities. Clusters of minor civil divisions were used to reflect centre–hinterland relationships in these sites. Previous work with similar aggregations revealed that the units were meaningful for respondents (Bourke, Jacob, & Luloff, 1996; Claude & Luloff, 1995; Luloff, Bourke, Jacob, & Seshan, 1995; Theodori, Luloff, & Willits, 1998).

The first type (economic growth/high availability of services) was represented by the Wellsboro area of Tioga County. This area consisted of Wellsboro Borough and Delmar Township. The second type (economic growth/low availability of services) was represented by the Blossburg area of Tioga County. This area included Blossburg and Liberty Boroughs and Bloss, Hamilton, Liberty, and Union Townships. The third type (economic decline/high availability of services) was represented by the Bradford area of McKean County. This site consisted of Bradford City, Lewis Run Borough, and Bradford and Foster Townships. The fourth type (economic decline/low availability of services) was represented by the Port Allegany area of McKean County. This area included Port Allegany Borough and Annin, Ceres, Liberty, and Norwich Townships.

Household survey data were gathered by a drop-off/pick-up questionnaire procedure (Steele et al., 2001). During the summer of 1998, survey questionnaires were hand-delivered to 400 randomly selected households in each study site and picked-up within a few days of delivery. To obtain a representative sample of individuals within households, response was requested from the adult who had celebrated the most recent birthday. The survey instrument, organized as a self-completion booklet, contained 61 questions and required approximately 30 minutes to complete. Overall,

Table 1. Selected Sample Distributions Compared with 1990 and 2000 Census Data.

	Census 1990	Sample 1998	Census 2000
Percent of population 25 years and older with high school or higher degree			
Wellsboro	77.9	90.2	83.2
Blossburg	71.5	87.1	81.0
Bradford	76.8	93.4	83.4
Port Allegany	71.1	90.3	83.4
Percent of population 25 years and older with bachelor's degree or higher			
Wellsboro	20.0	31.1	20.7
Blossburg	11.4	23.8	12.8
Bradford	13.8	26.2	17.6
Port Allegany	8.4	21.4	12.6
Percent of population 65 years and older			
Wellsboro	19.9	24.0	24.6
Blossburg	15.9	29.7	24.2
Bradford	18.1	30.4	23.5
Port Allegany	14.0	25.3	20.7

Note: Census 1990 data from Theodori (1999) and Census 2000 data from U.S. Census Bureau (2008).

a response rate of 72 percent was achieved, resulting in 1,265 completed questionnaires across the four sites.

Table 1 presents selected sample distributions and comparable Census data from 1990 and 2000. As can be seen in the table, the sample is somewhat more educated than the general population in the study areas, in terms of the number of both individuals with a high school degree or higher and those holding a BA or higher degree. In addition, the sample is also slightly older.

Although the survey data were collected for purposes other than the present study, the range and depth of questions were well suited for our objectives. Many questions were asked about household finances, health status, and recent health care experiences and problems, emotional well-being, community ties, and household composition.

Physical and Emotional Well-Being Measures

We used a subset of physical functioning items from the Medical Outcomes Study's 36-item short form (Ware & Sherbourne, 1992). The seven items

included some activities of daily living (ADLs) such as traversing stairs, kneeling or stooping, lifting or carrying objects less than ten pounds, and using hands and fingers. The remaining items included instrumental activities of daily living (IADLs) such as seeing (even with glasses), hearing, and walking. Following traditional procedures, respondents could choose from among three answer alternatives as they indicated the extent (if any) of the difficulty they had doing the activities: none (3), some (2), a great deal (1). Responses were coded to reflect physical well-being, i.e., the absence of difficulty in completing the items. When summed, the respondents' scores reflected the extent of their physical well-being by the absence of difficulty completing items. This way of measuring adults' physical impairments (if any) is also used to define specific degrees of disability, where moderate disability = moderate difficulty and where a great deal of difficulty = severe disability (Cockerham, 2007, pp. 165–167). Consequently, as is indicated by the visual impairment indicator (beyond glasses), the variation in physical well-being we deal with here involves significant decrements in physical functioning.

The reliability of our physical well-being measure was first assessed with a parallel item about general health. “Would you say your health is: excellent = 3, good = 2, or fair/poor = 1.” Reliability is suggested by the bivariate correlation between physical well-being score and self-reported general health ($r = .57, p < .001$). Second, respondents' scores on the physical well-being composite were judged to be internally consistent with Cronbach's alpha = .84. We judged the physical well-being scores to be valid because the scores were correlated as would be expected with well-known covariates of physical health: age ($r = -.40, p < .001$), education ($r = .21, p < .001$), household income ($r = .33, p < .001$), being unable to fill all prescriptions ($r = -.13, p < .001$), and length of time since last overnight stay in a hospital ($r = .34, p < .001$). As a final indication of confirmatory evidence about the validity of our physical well-being index, we ran a similar model on overall self-reported health status using the same indicators as used here (data not shown). The results were similar to the results of our model-building the explanation of divergence in scores on the physical well-being index.

Ten questions asked about respondents' emotional status and outlooks on life. They were used to index emotional well-being; five response options ranged from “almost always true” to “never true.” Following Theodori (2001), one item, “I am bothered by noise” was removed from the analysis due to its poor relationships with the other nine measures as indicated by factor and reliability analyses. The remaining items were reverse coded to

reflect almost always true (5) for positively worded items (e.g., “I generally feel in good spirits”) and never true (5) on items that were negatively phrased (e.g., “Things seem hopeless”). Respondents were asked the items in the context of how true the items were concerning their emotional state and their general outlook on life. The latter included items such as “I feel down in the dumps” and the former included things such as “I feel depressed.” Emotional well-being scores reflect the summation of the factor weighted scores of the nine items. Scores increased with emotional well-being.

The reliability of the emotional well-being index was assessed first by its correlation with a parallel form, five-option answers to a question about general happiness, where 5 = very happy and 1 = unhappy. The correlation was .67 ($p < .001$). Internal consistency also was indicated by Cronbach’s alpha = .90. The emotional well-being index was judged to be valid, since scores were correlated as expected to well-know covariants of emotional well-being: education ($r = .15, p < .001$), household income ($r = .20, p < .001$), being married ($r = .08, p \leq .01$), and interaction with neighbors ($r = .19, p < .001$).

Household Assets Measures

We used various household asset indicators. Some were global indicators – total household income and home ownership – but others were specific measures of liquidity (e.g., business income, investment income, social security payments, and retirement pensions) that could be used to address health care needs and costs. In addition, several financial asset measures of the respondents including employment, salary information, and a set of items dealing with unaffordable health needs – a member of the household unable to get medical help, dental help, inability to fill prescriptions, and the time since last seeing a dentist – were included. Items on whether all household members had health insurance were included, as was the overall rating of local medical care.

Supports Measures

An interaction measure consisted of items such as interacting with close friends and neighbors (Cronbach’s $\alpha = .65$). We created a health and sickness needs assistance index consisting of items dealing with having

access to people able to help with household tasks, care for the house when the residents were gone, help care for members of the household who were unwell, and having access to someone capable of providing a ride when necessary (Cronbach's $\alpha = .89$).

Community Ties Measures

Community ties measures used included length of residence, religious attendance, distance to and general feeling about community medical facilities, the proportion of adults in the community that respondents' knew, and feelings about the community as a place to raise a family. In addition, a community embeddedness index was created, which consisted of items measuring community interest, community activeness, level of belonging to community clubs, hours spent in community activities, and participation in cooperative building/funding raising (Cronbach's $\alpha = .75$).

Control Variables

We tested the net effects of specific types of household assets upon health and emotional well-being differences, especially those indicators of more (or less) liquidity in dealing with the costs of health care or the ongoing expenses of dealing with sicknesses. We controlled several traits of respondents known to influence health status – age, gender, educational attainment, and employment status. Household composition was indicated by items dealing with household size and composition – number of members less than 5 years old, 6–18 years old, and numbers of the household more than 65 years of age. The respondent's marital status (1 = married, 0 = not married) and widowhood status (1 = widowed, 0 = not widowed) were also included. We also controlled for several household context variables expected to affect options for dealing with health maintenance and sickness – including extent of healthcare coverage in the household and home ownership.

Analysis

Nested regression techniques were used to build a statistical model of variation in respondents' physical and emotional well-being. In model-building,

we entered control variables first: respondents' sociodemographics and household context indicators. Then, we introduced sets of items about financial assets, supports, and community ties. The net effects of types of household assets were assessed in terms of their contribution to the total model across the stepwise procedure. The outcome of each final model consisted of only statistically meaningful determinants (Model 5). Doing this enabled conclusions about which types of assets (if any) had net effects upon respondents' self-reported physical and emotional well-being.

RESULTS

Physical Well-Being

The first hypothesis that we tested was that household assets would have positive net effects upon respondents' self-reported physical well-being scores. The findings in Table 2 provide delimited rather than general support for that expectation. Looking first at the control model (Model 1), we see the net effects of selected sociodemographics and household context indicators collectively explained nearly one-fourth of the variance in physical well-being ($R^2 = .23$). Age had by far the strongest negative net influence upon physical health ($-.33, p < .001$), both in Model 1 and in the rest of the analyses. Being widowed ($.09, p < .05$) and being employed ($.17, p < .01$) were positively related to better physical health; these indicators remained significant and positively related to better physical health throughout the analyses as well. However, the initial importance of both education ($.14, p < .01$) and being married ($.09, p < .05$) (in Model 1) were attenuated when financial indicators were entered in Model 2; both indicators remained unrelated thereafter. The effects of marital status and education reflected differences in assets associated with better education and being married, for example, increased income from both spouses working.

Several household context indicators were statistically important throughout the analyses. Household size had a negative net effect upon physical health scores in every model but the first. This suggested that households had trouble maintaining all their members' health status as the numbers of dependent people living together increased. In contrast, the number of children less than five and youth from 6 to 18 each had positive net effects upon physical health scores in Models 2 through 5. These results suggested physical health was generally better in households with children

Table 2. Betas and Coefficients of Determination for Independent and Control Variables on Physical Well-Being ($n = 853$).

	Model 1	Model 2	Model 3	Model 4	Model 5
Age	-.33***	-.34***	-.34***	-.36***	-.35***
Sex	.02	.03	.03	.01	
Married	.09*	.01	.01	.01	
Widowed	.09*	.10**	.10**	.09*	.10**
Educated	.14***	.02	.02	.01	
Employed	.17**	.15**	.14**	.14*	
Household size	-.09	-.12*	-.12*	-.14*	
Number in household under 5	.05	.09*	.09**	.09*	
Number in household between 6 and 18	.06	.10*	.10*	.10*	
Number in household over 65	.03	.06	.06	.06	
Change in household size	-.01	.00	.00	-.01	
Minutes to work (inverse)	.14	.14	.13	.12	
Miles to work (inverse)	-.23*	-.22*	-.21*	-.22*	-.19*
Social security payments		-.18***	-.18***	-.19***	-.18***
Retirement pension payments		.15***	.15***	.15***	.15***
Everyone in household insured		.00	.00	.00	
MD help		.04	.04	.04	
Length of time since last dental screen		-.09**	-.09**	-.08**	-.08**
Dental help		.06	.06	.05	.07*
Prescription help		.08**	.07*	.07*	.09**
Hold income		.10**	.09*	.10**	.09**
Business income		-.02	-.02	-.03	
Investment income		.13***	.12***	.12***	.12***
Own home		.03	.04	.03	
Interaction			-.01	-.02	
Assistance			.08*	.07*	.07*
Distance to doctor/medical clinic				-.02	
SQRT length of residence				.00	
Place to raise of family				.06	
Rating of med services				.03	
Adults known (%)				-.01	
Embeddedness				-.01	
Religious attendance				.09**	.10***
Adj. R^2	.23	.31	.31	.32	.31
F -test	20.2***	16.7***	15.7***	13.0***	33.5***

* $p < .05$; ** $p < .01$; *** $p < .001$.

present. Miles to work (inverse) was negatively related to physical health scores, i.e., the shorter the commuting distance, the lower one's health score. This may be an employment effect in those individuals who are unemployed or retired had no commute. Additional analysis not presented in this chapter

also suggests that individuals with commutes of more than 30 miles frequented primary care physicians who are also 40 or more miles from the respondent's home. Thus, differences between local and nonlocal health care providers may also account for a portion of this difference in physical well-being.

The household financial assets indicators introduced in Model 2 that were statistically important and remained so throughout the rest of the analyses included Federal Insurance Collection Act (FICA), retirement pensions, and household income. In addition, not experiencing any problems in getting needed dental care emerged as statistically important in the last model. Although more global indicators of socioeconomic status (SES), such as home ownership and business income, were independent of the variation in physical health scores, indicators of liquidity related to monthly flow of resources were and remained significant in the subsequent analyses. Their importance in the final model was as follows: pension payments (.16, $p < .001$), investment income (.12, $p < .001$), and household income (.10, $p < .01$) each had positive impacts upon physical health, as did not having problems in the last year household members received needed dental care (.07, $p < .05$) and having no problems in filling prescriptions members needed during the last year (.08, $p < .01$). Conversely, FICA payments (-.15, $p < .001$) and time since respondents last saw dentists for oral health screens (-.09, $p < .01$) were related to lower physical health scores. Overall, these findings indicated having ongoing resources to deal with household health needs is positively related to respondents' physical health scores.

The addition of supports/assistance and interaction indicators in Model 3 and the wide variety of social contact and involvement indexes entered in Model 4 did not change the major effects first found in Model 2. Although both the assistance index (.07, $p < .05$) and the rating of the community as a place to raise a family (.07, $p < .05$) were positively related to physical health scores, they added little overall explanatory power ($R^2 = .32$ in Model 5 versus $R^2 = .31$ in Model 2). Overall, we found respondents' physical health scores were primarily dependent upon age, being in household contexts with access to insurance coverage, and in households with the ongoing liquidity to deal with all members' health needs.

Emotional Well-Being

Our second hypothesis was household assets would have positive net effects upon respondents' self-reported emotional well-being scores. Like

Table 3. Betas and Coefficients of Determination for Independent and Control Variables on Emotional Well-Being ($n = 827$).

	Model 1	Model 2	Model 3	Model 4	Model 5
Age	.16**	.15*	.17**	.13*	.10**
Sex	.04	.06	.05	.01	
Married	.15***	.07	.06	.05	
Widowed	.08	.07	.06	.04	
Educated	.15***	.03	.01	-.03	
Employed	.12	.03	.00	.00	
Household size	-.08	-.14*	-.13*	-.15*	
Number in household under 5	.02	.08	.07	.07	
Number in household between 6 and 18	.04	.10	.09	.06	
Number in household over 65	.02	.04	.03	.04	
Change in household size	.04	.04	.04	.02	
Minutes to work (inversed)	.21	.16	.13	.09	
Miles to work (inversed)	-.18	-.17	-.16	-.14	
Social security payments		-.08	-.10	-.12*	
Retirement pension payments		.07	.07	.07	
Everyone in household insured		.01	.00	.00	
MD help		-.02	-.03	-.04	
Length of time since last dental screen		-.03	-.02	.01	
Dental help		.13***	.12***	.11**	.10***
Prescription help		.13***	.13***	.11***	.11***
Household income		.17***	.16***	.16***	.17***
Business income		.08*	.07*	.05	
Investment income		.10**	.09*	.07*	.07*
Own home		-.01	.00	.00	
Interaction with others scale			.11***	.07*	.09**
Perceived available assistance from others scale			.26***	.23***	.24***
Distance to doctor/medical clinic				.00	
SQRT length of residence				-.04	
Place to raise of family				.14***	.14***
Rating of med services				.08*	.07*
Adults known (%)				.02	
Embeddedness				.05	
Religious attendance				.14***	.15***
Adj. R^2	.06	.15	.25	.30	.30
F -test	5.0***	7.0***	11.3***	11.7***	35.9***

* $p < .05$; ** $p < .01$; *** $p < .001$.

the results on physical health in Table 2, findings in Table 3 only partially supported this hypothesis. Moreover, while the model developed to explain variance in well-being scores was about as powerful ($R^2 = .29$) as of the one found in Model 5 for physical health differences ($R^2 = .32$),

the components were different. Age had a small, positive net effect upon emotional well-being scores, in contrast to its large negative effect upon self-reported physical health. Besides age, none of the traits of respondents backgrounds or the contexts of their households which played a role in explaining emotional well-being differences in earlier models had any statistical importance in Model 5. Their effects in earlier models disappeared by Model 5. Household income (.15, $p < .001$), investment income (.07, $p < .05$), not experiencing problems in the last year with household members getting needed dental care (.10, $p < .001$) or in filling prescriptions (.11, $p < .001$) were all related to higher emotional well-being scores. Emotional well-being was not tied to global indicators of SES (home ownership and business income) but rather to the inflow of monthly income necessary for household members' ongoing health needs.

The major difference between the model-building of divergence in respondents' physical and emotional well-being scores was associated with the role of Model 2. For physical well-being, nearly all the explanatory power was generated by Model 2 ($R^2 = .31$), but for emotional well-being only half ($R^2 = .15$) of the final explanatory power ($R^2 = .29$ in Model 5) was explained by Model 2. Moreover, unlike differences in physical health ($R^2 = .23$ in Model 1), emotional well-being scores were not primarily dependent upon traits of respondents' backgrounds, household contexts related to composition, and to the parameters of insurance coverage ($R^2 = .06$ in Model 1). Beyond the effects of age and resources to deal with household members' ongoing health needs, these results clearly indicated having social contacts who could provide assistance as well as a wide range of community ties enhanced respondents' emotional well-being. In contrast to differences in respondents' physical health being independent of most social contact measures, these findings indicate people in all types of households felt emotionally better when they had ties to others in their communities. This is particularly notable in the case of having others to help with problems of household issues including sickness (.23, $p < .001$), the positive view of the community (.15, $p < .001$), and the community embeddedness index (.12, $p < .001$). These effects remained important beyond those associated with assets and liquidity. Having social contacts, especially those that can help households deal with sickness and travel to healthcare providers, enhanced emotional well-being. Conversely, not having enough resources to deal with ongoing dental and prescription needs negatively impacted emotional well-being, irrespective of resources or liquidity.

DISCUSSION

Physical Health

The large negative effect of aging on our respondents' physical health scores has important implications concerning the health needs of rural populations. That age was related to more physical health problems but not declines in emotional well-being scores is consistent with the idea that the elderly view their health as good for their ages (Cockerham, 2007). These findings are also consistent with the more emotionally healthful aging that occurs among rural residents who maintain the community ties that we have found associated with higher emotional well-being scores (Glasgow, 2004). As physical health problems among rural elders get compressed into very old age (Goesling, 2007), there will be important effects upon the health needs of rural populations. The large negative effect of age upon health we have found in our rural sample makes the needs of rural elders both more numerous and diverse. FICA and Medicare reimbursement structures and proposed cutbacks in them clearly are at odds with these future needs of the longer-term residents of many rural areas (Taylor & Comite, 2004). These needs will make it even more imperative to provide incentives for physician specialists to locate in rural areas and in the regional health care facilities that serve them (Nicholson, 2008).

The future demands of rural healthcare will continue to be related to and will extend beyond the effects of aging (Goesling, 2007). Yet two trends are influencing variation in health and health care needs among nonmetro communities. First, many rural areas are attracting residents that are rapidly diversifying populations – foreign-born, returning nonwhites, and families with children and retirees, among others (Glasgow, 1995; Saenz & Torres, 2003; Sutton & Day, 2004). Coupled with the needs of elders and since health insurance coverages in rural areas are usually less adequate than those in metro areas, there will be increased needs for consolidated and expanded health care provision. More diverse providers and networks will be necessary to accommodate the needs of the increasingly diverse rural populations. Such provider networks have two major problems to overcome to accommodate expanding health care needs. First, there is an overabundance of primary care providers and not enough specialists (Wellever, 2004). The second is that telemedicine has not been used by enough rural primary care providers and when it is the referrals may be made to more distant medical centers rather than to closer specialist providers (Grigsby & Goetz, 2004). A key for future development will be the degree to which all

rural providers can better relate themselves to the nearest medical centers and consistently use them for the referral needs of all their rural patients.

The ongoing effects of commodified health care in the United States, as types and amounts of service become increasingly related to prices, will lead to the general patterns of SES differences in health and premature mortality that have been found in recent studies (Lutfey & Freese, 2005; Phelan, Link, Diez-Roux, Kawachi, & Levin, 2004). Our results have at least two important implications for specifying how affordability effects influence the health of rural residents. First, beyond personal traits known to enhance health and longevity, we found people in households with insurance coverage more suited to their needs were healthier. Parameters of health care coverage related to being employed, having children or youth at home, and being widowed suggested types of private coverage situations that enhanced health. Household coverage as such was not related to health, however, and the larger the household, the less healthy respondents were. These results suggest that the health of rural residents is affected by the limits of the types of coverage available to them and the totality of household needs in relation to existent coverage resources. These shortfalls clearly compound the overall lower rates of health coverage for nonmetro residents as compared with those living in all types of metro areas (Hummer et al., 2004).

Second, beyond global proxies for SES status such as home ownership and business and family income, which were not related to physical health differences among members of our rural sample, we found indicators of liquidity to pay for ongoing health needs of household members very important influences on physical health. These include but go beyond being employed and income. Being employed and traveling to work were related to better physical health, beyond the effects of age, education, and marital status. These results clearly indicate the need for more careful examination of employment effects upon the health of rural residents. Attributing the health of rural residents to agricultural occupations will be erroneous (Wallace et al., 2004). Beyond employment effects, we found pension payments (+), investment income (+), social security payments (-), length of time since last dental screen (-), no household members having problems in the last year accessing dental care (+), and no household members having problems getting prescription medications (+) all related to differences in health. Our results suggest that improving rural health will depend upon making rural health services not merely more accessible but also more affordable. These issues of affordability compound the effects of deep and enduring place-related poverty faced by many rural residents (Glasgow, 2004).

Among our rural respondents, many damaging affordability effects concern the conditions that prevent members of households from getting the dental and prescription care that they need. The typical exclusion or delimitation of the dental, vision, hearing, and podiatric care as well as other types of services in most health care plans pushes the entire expense for such services into monthly budgetary demands upon household liquidity. Another issue concerns the increasing costs of annually recommended health screens, making it more likely that serious health problems including glaucoma, oral cancers, diabetes, and other cancers remain undetected. This undoubtedly helps explain why many types of cancer, especially skin cancers and cancers more apt to occur among women, are higher in rural than in metro areas (Wallace et al., 2004). Our study also verifies that the effects of nonaffordable health care (only in part due to lack of insurance) among rural residents of working age who do not qualify for public insurance (Hummer et al., 2004). It is important to remember that unless many forms of health care become more affordable and accessible to rural households, not only will ongoing symptoms be less treatable but many means of diagnosing important treatment needs will necessarily be foregone (Mechanic, 2004).

Overall, social supports and community ties did not have major net statistical impacts upon respondents' physical health scores. Two exceptions involve the available assistance scale and evaluating the community as a good place to raise a family. Having those who can help rural patients deal with their treatment needs and necessary ongoing activities in their households contribute positively to health maintenance. Although the traditional advantage of marriage and family structure that helped older rural residents maintain better health may have disappeared, the effects of social ties that help people deal with health care needs are still quite important (Glasgow, 2004).

Emotional Well-Being

There were some similar effects in the models for physical and emotional well-being related to specific financial assets. These included household income, investment income, and household members in the past year being able to receive dental care and being able to fill necessary prescriptions. Liquidity to pay for all the health needs of household members positively influenced emotional well-being as well as physical health. Households with

problems having enough liquidity for collective health needs in our rural sample had higher rates of emotional strain than other studies (Cockerham, Hattori, & Yamori, 2000; Smith et al., 2005) have found related to problems in affording health care. Other factors related to differences in physical health among our rural respondents made no differences in their emotional well-being scores. These included traits such as being widowed, being employed, and time since last dental screen. Other influences unrelated to emotional well-being levels were household context factors including size, presence of children and youth, FICA payments, and retirement pension income. As with physical health, members of our rural sample with increased well-being scores were in households with the liquidity sufficient to pay for all the health needs of household members.

Many previous studies have shown the positive effects on health of educational attainment and being married (Cockerham, 2007). Our study of rural residents, in contrast, draws attention to affordability effects that can offset the effects of educational attainment and marital status. Many full-time workers in the United States are not provided health insurance by their employers, and many rural workers are more apt either to be self-employed or have lower paying jobs in smaller firms that are less likely to offer such benefits (Hummer et al., 2004). For these reasons, the increasing costs of health care and the demands of health care costs in rural household budgets have the negative impacts upon physical health and emotional well-being that we have found.

Like our results concerning how aspects of household liquidity influenced respondents' physical health, we found various social ties had positive net effects upon rural residents' emotional well-being scores. On the one hand, closer ties with others in the community and especially with people who can assist patients in dealing with health problems enhanced the emotional well-being of our respondents. On the other hand, involvement in community organizations and activities reflected in the embeddedness scale had an additional positive effect upon emotional well-being. These findings clearly show the importance of both informal and formal social interactions that form the sorts of relationships that enhance rural residents' emotional well-being. They are essential ingredients in what has been called healthy aging in rural communities (Glasgow, 2004). Lastly, that respondents' rating of the community as a place to raise a family and local medical facilities were related to higher well-being scores suggests how collective problem solving in rural communities enhances residents' well-being (Young, 2004).

PUBLIC POLICY IMPLICATIONS

The findings of our study of health in a sample of rural residents provide clear implications for the public policy action that will be necessary to sustain and improve health problems in nonmetro areas. With respect to physical health, programs must be developed to ensure that the ongoing health needs of all types of rural residents are affordable as well as accessible. Unless services are made affordable, attempts to regionalize or network services and/or to increase telemedicine will not have enough impact. Moreover, policy makers must refocus programs in ways that address the fuller unmet needs of rural household members and not merely particular types of individuals (e.g., the elderly or disabled) in them. Providing some members of rural households with the specialized help while excluding others who may have equally pressing health needs will not be adequate. All rural areas should have ongoing programs that support the ways in which patients may be assisted in getting health services and in arranging for their households to be helped in ways that accommodate their being and remaining patients. Overall, our study suggests that rural public health programs must go well beyond increasing the accessibility of health services. Just as much more attention must be given to how such services can be made both more affordable and enduring. Having sufficient numbers of practitioners available in rural areas will also be very important (Nicholson, 2008). Enticing primary care physicians to locate in rural areas and providing them incentives to use telemedicine options would be positive steps in increasing rural health care provision (Grigsby & Goetz, 2004).

Ironically, the results in this study as well as previous studies (Grimm & Brewster, 2002; Grimm et al., 2003; Smith et al., 2005) show that emotional well-being is enhanced when all members of households can confront their ongoing health needs. Consequently, programs designed to ensure that rural residents can do so will improve emotional well-being as well as physical health. The combined payoffs of such programs may be enough to sustain their increased costs. Public policy efforts should increase the ways in which health providers' services can be interrelated with rural community activities and organizations. Holding free clinics or screenings with local followup referral systems being available would be excellent ways to improve the lives of rural residents. Better ways of interlacing provider networks with the embeddedness available in rural community organizations such as churches and clubs would be effective ways of ensuring health care in rural areas is in fact sustainable (Wellever, 2004).

CONCLUSION

Our study showed that as rural residents age, health status is influenced by social contacts that give assistance and help with day-to-day aspects of care, and by household ability (liquidity) to pay for all household members' ongoing health care needs. Shortfalls in households being able to afford and to deal with all the health care their members need negatively affected members' well-being. Therefore, how public policy action may be better developed to deal with rural household members' collective needs will be an important way of avoiding some of Mechanic's (2004) negative predictions about the effects of pricing and rationing in future U.S. health care.

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DISPARITIES IN HEALTH CARE AMONG VIETNAMESE NEW ORLEANIANS AND THE IMPACTS OF HURRICANE KATRINA

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ABSTRACT

This chapter examines the use of routine health care and disparities by socioeconomic status among Vietnamese New Orleanians. It also assesses how these differences may have changed as the result of Hurricane Katrina, which struck the Gulf Coast in late summer 2005, devastating the infrastructure of the health care system of New Orleans. Data for this study come from a panel of Vietnamese New Orleanians who were interviewed in 2005, just weeks before the hurricane, and followed up twice near the disaster's anniversary in 2006 and 2007. Findings show a steep declining trend in routine health care after the hurricane, compared to 2005. Marked differences in health care were already apparent in 2005 (before Katrina) between education levels, homeownership, and health insurance coverage. These differences were significantly reduced one year after the hurricane. We argue, however, that the reduction in disparities was not due to improved health care services or improved health care

**Social Sources of Disparities in Health and Health Care and Linkages to Policy,
Population Concerns and Providers of Care
Research in the Sociology of Health Care, Volume 27, 301–319
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ISSN: 0275-4959/doi:10.1108/S0275-4959(2009)0000027016**

practice. Instead, it was likely due to the influx of free health care services that were provided to meet urgent needs of hurricane survivors while the area's infrastructure was devastated. By 2007, these free health care services were no longer widely available. Routine health visits dropped further and the temporary reduction in disparities disappeared. This chapter also underlines ongoing shortages of essential health care services for Vietnamese New Orleanians. Efforts need to ensure that all members of this community receive the full array of comprehensive and culturally appropriate health care as they continue to rebuild from the Katrina disaster.

INTRODUCTION

The levee failures after Hurricane Katrina struck the Gulf Coast resulted in heavy flooding in the New Orleans area, including New Orleans East, where the majority of the city's Vietnamese-American resides. While Vietnamese-Americans appear to have the highest return rates in the city (Vu, VanLandingham, & Do, 2008), basic health services are virtually absent in their community: there is only one Vietnamese family doctor in the area (compared to two physicians pre-Katrina) and the closest emergency health facility is 15 miles away. The limited availability of health services may result in health care inequality among the community as the well-off may be more likely to use scarce health services than others. This chapter examines disparities in health care utilization by socioeconomic status among Vietnamese-Americans in New Orleans before Hurricane Katrina and the extent to which the disaster affected such disparities in its aftermath. Our analyses benefit from unusual pre- and post-disaster data from a population-based sample of working-aged first-generation Vietnamese-Americans.

BACKGROUND

Health Problems After Hurricane Katrina

Disasters present a wide range of mental and physical health challenges to survivors (Norris et al., 2002a; Norris, Friedman, & Watson, 2002b; Phifer, Kaniasty, & Norris, 1988; Soeteman et al., 2008). Hurricane Katrina was no

exception. Substantial health care needs for chronic physical conditions and emotional distress were found for half or more of all adult survivors 2 months after the hurricane occurred (CDC, 2006). Six months after the hurricane, a survey of families with children still residing in trailers or hotel rooms supplied by Federal Emergency Management Agency (FEMA) found that 44% of adult caregivers had significant psychological distress (Abramson & Garfield, 2006). Kessler, Galea, Jones, and Parker (2006) followed a subset of a pre-disaster population-based sample several months after the hurricane and found that the post-disaster prevalence of serious mental illness nearly doubled that of pre-disaster. Another survey with an area-based probability sample conducted one year after the hurricane reported substantial mental health problems: 19% of those surveyed experienced probable mild-moderate mental illness and another 20% experienced probable serious mental illness (Sastry & VanLandingham, 2008).

While these studies are focused largely on English-speaking populations, there has also been evidence of disparities in health issues by race and culture. Generally, blacks in New Orleans reported higher stress levels than whites concerning both their present predicament and future prospects (Elliott & Pais, 2006). This is consistent with findings from an earlier study (Kessler, 1979; cited in Elliott & Pais, 2006), which indicated that racial minorities were more likely than whites to report “extreme distress” in times of crisis because they were more influenced by stressful situations. Increased risks of adverse psychological consequences after disasters among ethnic minorities were also found in a review by Norris and Alegria (2005). In New Orleans, Sastry and VanLandingham (2008) also reported disparities by race as the most salient disparities in mental illness post-Katrina: blacks were more likely to experience psychological distress than whites and others, a difference that appeared attributable to a higher probability of severe property damage among blacks.

Whether Vietnamese-Americans in the New Orleans area who experienced Hurricane Katrina had similar, better, or worse outcomes is a question that has received less attention. Using the same population-based data that are used in this analysis, Norris, VanLandingham, and Vu (2009) find that while 21% of working-aged first-generation Vietnamese-Americans met criteria for partial post-traumatic stress disorder (PTSD), only 5% met the criteria for full PTSD; rates that are substantially less than those reported for other groups of pre-disaster New Orleans residents.

Zhou and Bankston (1994, 1998) and Bankston and Zhou (1997) studied this same community extensively before Katrina for their seminal work on

the assimilation of Vietnamese-Americans into U.S. society. They found that Vietnamese-Americans typically arrived poor and generally moved into marginal urban areas similar to their enclave in New Orleans East. These two authors credit the close-knit character of the community – developed in part due to the enormous suffering so many experienced as part of their exodus from war-ravaged Vietnam – with the general success of most second-generation Vietnamese-American children in avoiding many of the urban perils that plague their similarly disadvantaged neighbors. These same community characteristics may well prove to be a source of resilience for their first-generation parents as they move on with their lives post-Katrina. Indeed, [Leong, Airriess, Li, Chen, and Keith \(2007\)](#), working in this community during the first few months post-Katrina, report that some survivors noted that rebuilding their lives post-Katrina was less difficult than relocating from one's place of origin. We heard similar reflections during our own fieldwork.

Health Care Utilization among Vietnamese-Americans

Early studies of health care utilization among Vietnamese-Americans have found use to be low ([Strand & Jones, 1983](#)). Compared to whites, Vietnamese-Americans are less likely to report one or two annual health care visit but more likely to report no annual visits at all ([D'Avanzo, 1992](#)). Utilization rates may also vary by geographic location. In Southern California, which has the largest concentration of Vietnamese-Americans, [Gellert \(1995\)](#) found that 70% of Vietnamese-American respondents reported routine health care visits. But others observed a lack of native Vietnamese primary providers serving this immigrant population nationally, although they tend to prefer health care from physicians of the same ethnic background ([D'Avanzo, 1992](#); [Spencer & Chen, 2004](#)).

Low health care utilization patterns among Vietnamese-Americans have been attributed to three broad factors: culture (e.g., health beliefs and language), physical barriers (e.g., health insurance and transportation), and knowledge or perception of access ([D'Avanzo, 1992](#); [Gellert, 1995](#)). The benefits of having a common language encourage many immigrants to seek care from Vietnamese-speaking physicians ([D'Avanzo, 1992](#); [Le, 2004](#); [Pham, Rosenthal, & Diamond, 1999](#)). A disjuncture between traditional and western belief systems has also been implicated in much of the literature as an important barrier to use of health care services among Vietnamese immigrants in North America and other developed countries (see, e.g.,

Donnelly, 2006; Fung & Wong, 2007; Houston, 2002; Le, 2004), although Jenkins, Le, McPhee, Stewart, and Ha (1996) did not find similar results. These cultural differences in belief systems involve not only the conceptualization of health and illness but also assumptions with regard to the patient-provider relationship (Donnelly, 2006).

Other constraints to health care among Vietnamese-Americans include unemployment, difficulties in obtaining government and other types of assistance, and lack of health insurance (Pham et al., 1999; Stephenson, 1995). Only about half of Southeast Asian immigrants have job-based health insurance compared to almost three-quarters of whites; 27% of Southeast Asian immigrants have no health insurance at all, compared with 13% of whites and 23% of blacks (Smedley, Stith, & Nelson, 2002). Many recent Vietnamese immigrants are also unaware of different health care options that are available to them (Gold, 1992; Hill et al., 2006; Ma, 2000; Miltiades & Wu, 2008). For example, among the 1975 refugee cohort in the Washington State, 50–70% of refugees were not aware of vital services including free emergency care, legal help, or low-income housing (Gold, 1992).

In New Orleans, many problems related to access to care that existed before Hurricane Katrina were exacerbated by the disaster. Before the storm, the number of hospital beds per 1,000 population in New Orleans was 3.03, already lower than the national average of 3.26. After the storm, the per capita figure dropped to 1.99 (Berggren & Curiel, 2006). In-patient beds for mental health services were reduced from a total of 462 beds before the storm to 160 beds afterwards, and only 3 of the 8 pre-Katrina mental health out-patient clinics in the area were open after the disaster (Rudowitz, Rowland, & Shartzer, 2006). Shortages of health care professionals remain: by 2008, there was only about one primary care physician for every 3,000 people and only one psychiatrist for every 21,000 people (Calderon-Abbo, 2008). By the spring of 2006, there had been a 28% drop in primary health care services available and the displacement of 24.4% of surveyed physicians from their residences (Madamala, Claudia, Hsu, Hsieh, & James, 2007). Quality of care may have suffered as well: among those providing post-Katrina mental health care, two in five reported being “burned out” in a web-based survey in 2007 (National Council for Community Behavioral Healthcare, 2007).

It has been well-documented that these post-Katrina shortages in access to health care and medication affected both native-born residents (CDC, 2006, Wang et al., 2008) and Vietnamese immigrants (Vu et al., 2008) in the affected area. Vu et al. (2008) found that one year after the hurricane, 40%

of working-aged Vietnamese-Americans in the New Orleans area still reported difficulties in obtaining health care and medication. But the degree to which access was affected by the disaster has received less attention, no doubt in large part due to the data demands that such an analysis would require. Fortunately, our pre- and post-Katrina measures for a population-based sample of working age Vietnamese immigrants provide a rare and valuable opportunity to highlight pre-existing disparities in health care utilization by social and economic factors within this key immigrant population, and the degree to which these disparities may have been exacerbated – or mitigated – by the Katrina disaster.

DATA AND METHODS

Data

Data for this chapter come from a pre- and post-Katrina panel of Vietnamese immigrants of working age (25–49) in New Orleans. Baseline data, including physical health measures and information related to health service utilization, were collected from 127 randomly selected individuals in 2005, only weeks before Hurricane Katrina struck the Gulf Coast. These same measures were collected again during the fall of 2006 for 82 members of the original sample. During the fall of 2007, we were able to re-interview 91 of the original cohort; 80 of these 91 responded to all 3 rounds of data collection. Respondents re-interviewed in 2006 and 2007 are made up almost exclusively of individuals who had returned to the New Orleans area after the evacuation; 46 of the original respondents were not re-interviewed in 2006. Those who had returned by 2006 were more likely than those who had not to be married, to own a home, to work in the skilled sector of the economy rather than in professional occupations, and to have children under 18 years of age (Vu et al., 2008). There were no significant differences in pre-Katrina health status between those who were re-interviewed and those who were not (results not shown). The potential impacts of differences between returnees and non-returnees on the current analysis will be discussed.

The key outcome of interest is whether an individual obtained a routine physical exam within the year preceding the interview. The main independent variables are socioeconomic measures, including education, homeownership, and health insurance. Health insurance is highly correlated

with employment status because most health insurance in this population was obtained through employers.

Statistical Models

Our data involve a three-wave panel design, observing the same individuals at roughly 1-year intervals. Panel data allow for much richer analyses of individual-level behaviors because they permit us to address the importance not just of observable confounders but also the influence of unobservable factors. More specifically, we assume in our models that there is a time-constant unobservable effect that influences the routine health care decision itself. There are different approaches to analysis that control for these unobserved factors (Brüderl, 2005; Wooldrige, 2002). However, most of these approaches would require that data be aggregated at the individual level, which would not be appropriate in this case as we aim to examine changes over time.

For this reason, we need an approach that allows us to control for unobserved factors at the individual level and, at the same time, to examine changes between three time points. We specify a random effect logit model containing an individual level effect α_i as follows:

$$Pr(y_{it} = 1)|x_{it}, \cdot \beta, \alpha_i) = \Lambda(\alpha_i + x'_{it} \cdot \beta_1 + t_{it} \cdot \beta_2 + x'_{it} \cdot t_{it} \cdot \beta_3)$$

where $\Lambda(z) = e^z/(1+e^z)$ is the logistic distribution; y_{it} = a measure of the routine health exam outcome for individual i at time t ($t = 0, 1,$ and 2); x_{it} = a set of characteristics of individual i at time t ; t_{it} = indicator of time; α_i = time variant normally distributed random error with mean 0 and standard deviation σ_α^2 (Cameron & Trivedi, 2008).

The above model does not have a closed form solution and the likelihood function and its derivatives are calculated in *Stata 10.0* using adaptive Gauss–Hermite quadrature with the *xtlogit, re* command. The *quadchk* command is used to refit the model with different numbers of quadrature points and compare the results (StataCorp, 2007).

We focus on several parameters. The first are the β 's for the individual covariates (β_1), which reflect the time invariant effect of the covariates (e.g., years of education) on the outcome of interest. For example, a positive β_1 for education indicates that individuals with higher education were more likely to have had routine annual health exam. The second important parameters are the β 's for the covariates interacted with the time dummy

variables for second and third waves (β_3). These interaction terms test whether the effects of the individual covariates have changed in statistically significant ways for the latter two waves, compared to the first wave (in 2005). A positive β_3 coupled with a positive β_1 of a specific independent variable indicates an increased inequality in health care by that factor over time, while a negative β_3 coupled with a positive β_1 indicates a decreased inequality in health care over time.

FINDINGS

The distribution of the panel sample by basic characteristics as measured in 2005 is presented in Table 1. Nearly three-quarters of the sample (73%) were more than 40 years old when they were first interviewed; one-third (32%) were females. Many more males than females emigrated to the United States after the war (Goodkind, 1997). More than half (56%) had at least 12 years of combined schooling in Vietnam and in the United States. The majority of

Table 1. Distribution of the Original Sample in 2005.

Characteristics	%
Age	
Under 40	27.1
41 and above	72.9
Gender	
Male	68.3
Female	31.7
Education	
< 12 years	43.9
≥ 12 or more years	56.1
Ownership of house currently lived in	
No	17.1
Yes	82.9
Have health insurance	
No	35.4
Yes	64.6
Acculturation	
Vietnamese	40.2
Bicultural	59.8
<i>N</i>	82

the respondents (83%) also owned their home before the hurricane hit. About a third – 35% – of the sample did not have health insurance in 2005. In terms of acculturation, 40% could be described as Vietnamese in orientation and 60% could be described as bicultural.

The first three columns of [Table 2](#) present the proportion of respondents who obtained a routine physical exam within the last 12 months and its variation by basic socio-demographic characteristics before and after Hurricane Katrina. There was a significantly declining trend in the percentage of respondents who obtained a routine physical exam in the 12 months before the interview. Before the hurricane occurred in late August 2005, as many as 71% of the respondents had had a routine exam during the previous year. This proportion dropped dramatically to 56% one year after the hurricane; two years after the hurricane, only 44% of the respondents had had a routine health exam during the past year ($p < .001$).

The first three columns of [Table 2](#) indicate several statistically significant variations in obtaining a routine exam by the basic socio-demographic factors of interest in 2005, 2006, and 2007. Sex differences in health care were significant in 2005: the vast majority of women (92%), compared to 61% of men, had obtained a routine exam during the past year ($p < .001$). Routine physical exam also varied by homeownership before the hurricane struck: more than three-quarters (77%) of homeowners had had a routine exam within a year, while only 43% of renters had done so ($p < .05$). Having health insurance, as expected, was an important factor that differentiated those with and without an annual routine physical exam as measured in 2005: while just over half of our respondents without health insurance had a routine exam within the last 12 months, 81% of the insured had done so ($p < .001$). Also, the vast majority (90%) of those who perceived their health to be poor in 2005 had obtained a routine exam within the 12 months before the survey, compared to only two-thirds of those who did not report poor health. However, this difference is not statistically significant. No differences were observed in routine health care between age groups,¹ education levels, and acculturation.

Over time, these variations are found to change markedly from the period just before Katrina (2005) to the period that followed (2006 and 2007). One notable finding is the disproportional decline of routine health care among women, compared to men. Annual health assessment for women dropped by half from 92% in 2005 to 46% in 2006, and then further dropped to less than 40% by 2007. Meanwhile, routine health care among males remained

Table 2. Factors Associated with Routine Physical Exam in the Last Year among Vietnamese Immigrants in New Orleans, 2005–2007.

	Routine Physical Exam within the Last Year				
	%			Coefficient (s.d.)	
	2005	2006	2007	Model 1	Model 2
Age				-.00	.02
Under 40	68.9	37.5*	53.9		
41 and above	71.7	63.8*	41.8		
Gender				-.11	-.02
Male	60.7**	61.1	46.2		
Female	92.3**	46.4	39.3		
Education				.01 [†]	.01
<12 years	63.9	64.5	40.5		
≥12 or more years	76.1	51.0	46.5		
Ownership of house currently lived in				.14	1.49 [†]
No	42.9*	83.3*	42.9		
Yes	76.5*	51.4*	43.9		
Have health insurance				.80*	1.61*
No	51.7**	56.8	30.8		
Yes	81.1**	55.6	50.0		
Overall health now is poor				1.03*	.90*
No	67.6	41.5**	40.0		
Yes	90.9	70.7**	48.6		
Acculturation				-.02	.01
Vietnamese	68.1	73.7**	46.7		
Bicultural	74.3	40.9**	40.0		
Year					
2005				—	—
2006				-.84*	1.30
2007				-1.37***	-1.151
Year* homeownership					
2005* ownership					—
2006* ownership					-3.27**
2007* ownership					-1.28
Year* health insurance					
2005* health insurance					—
2006* health insurance					-1.46 [†]
2007* health insurance					-.83
Year* years of education					
2005* 12 or more years					—
2006* 12 or more years					-.12
2007* 12 or more years					.05
Total	70.7**	56.1**	43.8**		
N	82	82	80	242	242

[†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

stable between 2005 and 2006 at about 60%; it dropped in 2007 to 46%, by which point it was higher than that for women.

Another key finding is changes in routine health care between homeowners and others. While homeownership conferred an advantage for routine annual health assessment in 2005 (compared to those who did not own a house), the difference was reversed one year after the hurricane: just over half of homeowners had obtained a routine health exam in 2006, compared to 83% of those who did not own a house ($p < .05$). Annual health care assessment then dropped among both owners and non-owners by 2007 to the same level of 43%.

Differences in routine health care seen between those with and without health insurance in 2005 were no longer observed after the hurricane. One year after Katrina, the decline in routine health care was more marked among those with health insurance than among those uninsured. One year after that (in 2007), routine health exam obtainment was stable among the insured but dropped among the uninsured, leaving the uninsured at a disadvantage compared to the insured. The differences in 2006 and 2007, however, were not statistically significant. Self-reported overall health status, which did not show a significant association with routine health care in 2005, was significantly related to health care in 2006 ($p < .001$). The differences were consistent during the initial two years after Katrina: a higher percentage of those who reported poor health had obtained an annual checkup than did those who did not report poor health. Routine health care declined for both groups.

The association between acculturation and obtaining annual health exams also showed interesting changes during this early post-Katrina period. While there was no difference in routine health care between Vietnamese-oriented and bicultural-oriented groups in 2005, the difference between them in 2006 was remarkable. Those more bicultural experienced a marked drop in annual visits while the more Vietnamese-oriented group experienced a small increase. As a result, only two in five among the bicultural group obtained routine health care in 2006, compared to nearly three-quarters of the Vietnamese-oriented group ($p < .01$). By 2007, however, the Vietnamese-oriented group experienced a sharp decline in health care, bringing the proportion of people who obtained routine health care among this group close to that of the other group.

Similar to variations in health care by overall health and acculturation, routine health care also did not show statistical significant differences by age in 2005 but did by 2006. The change results from a drop in health care among younger (under 40 years old) Vietnamese from nearly 70% in 2005 to

only 38% in 2006, while routine health care among older (41 years old or more) Vietnamese only went down slightly from 72% in 2005 to 64% in 2006 ($p < .05$). In 2007, the difference was reversed due to an increase to 54% of routine health care among the younger group and a drop to 42% among the older group.

*Factors Associated with Obtaining a Routine Physical Exam
and Changes Over Time*

The last two columns of [Table 2](#) present the results of the random effect multivariate models, which examine factors influencing health care and how these influences might have changed during the period from just before to just after the hurricane. Model 1 shows the main effects of socioeconomic factors and model 2 shows the interactions of these factors with time.

Results from model 1 show significant influences of education and health insurance on obtaining routine health care, as well as differences in obtaining routine health care by self-reported overall health status. Compared to an average middle-aged first-generation Vietnamese New Orleanian, people with more years of education were more likely to obtain routine health care ($p < .10$). Having health insurance is another factor significantly associated with increased routine health care: those who were insured were more likely than the uninsured to obtain routine health care ($p < .05$). Also as expected, people who reported poor overall health status were significantly more likely than those who reported better health to have obtained routine health exam ($p < .01$). In addition, model 1 shows a significant declining trend in health care over time, controlling for individual factors in the model: compared to 2005, individuals were significantly less likely to obtain a routine physical exam in 2006 and 2007 ($p < .05$ in 2006 and $p < .001$ in 2007).

Model 2 shows some evidence of change in the associations between individual socioeconomic factors and health care over time. Most noticeably were changes in routine health care by homeownership between the time just before and the initial two years after Katrina struck. In this model, homeownership provided an advantage in the obtainment of routine health care in 2005 ($p < .10$). This advantage was significantly reduced in 2006; in other words, the inequality in health care by homeownership was significantly reduced one year after the hurricane ($p < .01$). No changes in this dimension of inequality, however, were observed during the second year after the hurricane. There was also a slight reduction in inequalities in

obtaining routine health care by health insurance coverage in 2006 ($p < .10$), but not in 2007. There were no changes in the differences in routine health care by education during the period of interest.

Ethnicity of Health Care Providers for Vietnamese New Orleanians

During the year just before Katrina, among our respondents who had obtained an annual physical exam, three-quarters of them had done so from a Vietnamese health care provider (results not shown). During the first year after the hurricane, this proportion declined dramatically to 61% and further to 41% during the second year (2007). In addition, during this period, many of the factors that had distinguished those who sought out Vietnamese providers before Katrina became insignificant afterwards. Before Hurricane Katrina, respondents who are older (41 or above), who had no health insurance, and who were more Vietnamese in cultural orientation were much more likely than others to receive health care from a Vietnamese provider ($p < .05$, $p < .10$, and $p < .05$ respectively). Post-Katrina, the only significant predictor for receiving care from a Vietnamese provider was health insurance status: those who had no health insurance but received an annual health exam were still more likely than those who had insurance to visit a Vietnamese health care provider (rather than a non-Vietnamese provider) in 2006, but in 2007, this difference was reversed.

DISCUSSION

We examine patterns of use of routine health care among Vietnamese New Orleanians both before and after Hurricane Katrina struck the Gulf Coast in late August 2005. Measures of health status and access to health care were collected for a random sample of first-generation middle-aged Vietnamese New Orleanians just before the hurricane occurred, and most of these original respondents were followed up in 2006 and 2007, providing unique panel data for a longitudinal analysis of change in health care access for this population resulting from the disaster.

Our data show significant declines in obtaining annual routine health exams during these first two years post-Katrina. We speculate that this decline in use stemmed from two major factors. The first factor involves the widespread lack of health care services in New Orleans – especially in the East – immediately after Katrina struck. Post-Katrina access to health care

and medicine was cited as a major problem for over half of this Vietnamese-American population during 2006 (Vu et al., 2008). During the second year after the disaster (2007), a third of the respondents still reported at least some difficulties accessing health care (results not shown). Rudowitz et al. (2006) reported that the number of physicians throughout the affected area dropped from about 4,500 before to 1,200 after the hurricane, and the number of emergency medical service units declined from 17 in 2005 to 7 in 2006. Our findings suggest that this decline in providers was severe among Vietnamese-speaking practitioners, which may well have been a contributing cause in the steep decline in obtaining routine health care among Vietnamese-Americans, given their preference for such providers

Second, given the vast array of significant problems needing immediate attention from our respondents during these initial 2 years post-Katrina, for example, very large and widespread financial losses, problems with insurance and government agencies, over-crowding, and crime (Vu et al., 2008), one's own health care may well have been perceived as a low priority among members of this working-aged generation who bore the primary responsibility for getting their families and community moving forward again. More on this is discussed below.

While overall *access* to routine health care declined during the post-Katrina period, several *disparities* in obtaining routine health care – notably by health insurance and homeownership status – were significantly reduced in 2006. But by 2007, these disparities were indistinguishable from their pre-Katrina levels. This short-lived reduction in disparities may have been due to efforts by various agencies to provide free basic health care for all in the affected region, particularly during the year immediately following the hurricane (2006). Our discussions with community leaders indicate that health fairs and mobile vans helped to temporarily fill the major gaps that resulted from a health care infrastructure shattered by Katrina (Fr. N. Vien, personal communication; T. Tran, personal communication). Many of these efforts focused on areas that were especially hard-hit, including New Orleans East, where Vietnamese-Americans are concentrated. By 2007, most of these efforts to meet the most urgent health care needs post-disaster may have either been withdrawn or perhaps were no longer being accessed by members of this community. Receiving welfare is embarrassing to many Vietnamese-Americans, and therefore, many may have chosen to forego these free or subsidized services once their most severe health needs had been met.

Similar to the patterns above, bivariate pre-Katrina disparities favoring women with regard to obtaining an annual exam disappeared during the

first year after the storm. And as above, this reduction in differentials was due, unfortunately, not to any general improvements but rather to a steeper decline among women than among men. Further research is needed to assess possible differential impacts of Hurricane Katrina on the use of health care among Vietnamese men and women. Steep declines were also observed among our middle-aged respondents during this period. Health status measures of this same population (Norris et al., 2009) and from other post-Katrina studies (Sastry & VanLandingham, 2008) indicate that it was middle-aged (40 and above) individuals whose health suffered the most post-Katrina. Our data presented here unfortunately reveal that the middle-aged also showed some of the steepest declines in use of routine health care services during this same period.

Our study has important limitations. One is the small sample size, making it difficult to confirm key relationships such as associations between self-reported overall health status and routine health care in 2005 – significant in bivariate analysis but not in multivariate analysis. Second, only about two-thirds of the original sample was interviewed for all three rounds, introducing the possibility of bias due to loss to follow-up. Fortunately, on most key measures of interest, for example, a broad array of pre-Katrina physical and mental health status measures, differences between those re-interviewed and those lost to follow-up are very small and statistically insignificant. However, there are some differences. For example, those who were re-interviewed (i.e., had returned to the area) in 2006 were more likely to own a home than those who were not re-interviewed (Vu et al., 2008). Thus, limiting our analysis to those who were interviewed in all three waves skews the sample toward homeownership, which may result in an overestimate of the difference between homeowners and renters. Another limitation involves possible endogeneity between self-reported overall health status and routine health exams. Indeed, overall health status declined after Katrina (results not shown), along with declines in the use of routine health exams, suggesting that our reported effects of Hurricane Katrina on routine health exams may well be understated.

Despite these limitations, this chapter highlights important trends and key disparities in health care among Vietnamese-Americans in the greater New Orleans area before and after Hurricane Katrina. It also underlines ongoing shortages of essential health care services for Vietnamese New Orleanians. Routine annual exams are an important component of – and proxy measure for – the full array of basic health care services that must be available to working age adults. The proportion of our study population receiving these basic services remains far below what it was before the disaster. Women and

the middle-aged have been especially affected; those without health insurance remain at high risk. The opening of a new health clinic in the area during the second half of 2008 by Tulane University is one of the first steps to address these new and ongoing problems. It also presents a terrific opportunity to ensure that all members of this community receive the full array of comprehensive and culturally appropriate health care as they continue to rebuild from the Katrina disaster.

NOTE

1. All of our respondents are middle-aged.

ACKNOWLEDGMENTS

The study was supported in part by grants from the National Institute for Child and Human Development (R03HD042003; Mark J. VanLandingham, Principal Investigator), the National Institute for Mental Health (R01 MH 51278-10; Fran H. Norris, Principal Investigator), and Tulane University's Research Enhancement Fund. Helpful assistance with the fieldwork from Vietnamese Initiatives in Economic Training (VIET), Vietnamese American Community (VAC), Mary Queen of Vietnam Church, and a team of interviewers is gratefully acknowledged.

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