

Abstract Session G1: Health Disparities

Higher Cardiology Consultation Rates for Cardiovascular Disease for Hispanics Seen in High Proportion Hispanic vs. Low Proportion Hispanic Clinics in a Large Integrated Academic Healthcare System Lenny Lopez¹; Nakela Cook²; Richard Grant¹; Lina Pabon-Nau¹; Leroi Hicks³. ¹Massachusetts General Hospital, Boston, Massachusetts ; ²National Heart, Lung, and Blood Institute, Bethesda, Maryland ; ³Brigham and Women's Hospital, Boston, Massachusetts . (Proposal ID # 12139)

BACKGROUND: Prior studies have shown that co-management between generalists and cardiologists is one possible mechanism for improving overall quality of care. Lower rates of cardiology consultation have been proposed as one mechanism contributing to disparities in cardiovascular care. The ease of obtaining cardiology consultation, in turn, may be mediated by the primary care practice environment in which a patient receives care. We hypothesized that primary care practices that concentrate linguistically and culturally appropriate services for Hispanics may result in higher cardiology consultation rates for patients with coronary artery disease (CAD) and congestive heart failure (CHF).

METHODS: We assessed cardiology consultation rates comparing patients attending practices with higher overall proportion of Hispanic patients (HP practices, n =7) vs. practices with lower overall Hispanic proportion (LP practices, n =35). We used electronic records to retrospectively identify a cohort of 9,761 adults with CAD or CHF receiving primary care between 2000-2005. These patients were seen at least twice in the same primary care practice within the 12 months prior to their first primary care visit during the study period to ensure enrollees were regular ambulatory patients. Kaplan-Meier curves and log rank tests were used to calculate 5-year cardiology consultation rates and to compare time-to-consultation across socio-demographic variables (race/ethnicity, gender, age, primary language, and insurance status) and site of care. We performed multivariate analyses using Cox proportional-hazards regression, adjusting for clustering at the level of the physician, to assess differences in referral at HP vs. LP practices after adjusting for sociodemographic characteristics, Charlson score, disease severity and site of care. We used the frequency of follow-up consultation as the outcome variable in a Poisson regression analysis controlling for the aforementioned variables.

RESULTS: Among the 9,761 patients, 9,168 (93.9%) had CAD, 4,444 (45.5%) had CHF, and 3,851 (39.5%) had both conditions. Hispanics comprised 11% (n=975) of the CAD cohort and 11% (n=474) of the CHF cohort. Unadjusted Kaplan-Meier estimates demonstrated that Hispanics had similar rates of cardiology consultation compared to non-Hispanics (CAD: 79.2% vs. 79.7%, p=0.54; CHF: 87.5% vs. 90.6%, p=0.110). However, Hispanics at HP practices had higher rates of cardiology consultation than those at LP practices (CAD: 82.2% vs. 70.7%, p<0.001; CHF 91.2% vs. 89.7%, p<0.001). Multivariate analyses showed higher consultation rates for Hispanics at HP practices (CAD: hazard ratio [HR], 1.38; 95% confidence interval [CI], 1.16-1.64 and CHF: HR, 1.40; 95%CI, 1.10-1.81). In contrast, Blacks and Whites at HP practices had no significant differences in rates of consultation compared to those in LP practices. Hispanics at HP practices had 25% more consultations for CAD and 23% more consultations for CHF than Hispanics at LP practices adjusting for sociodemographic and clinical variables.

CONCLUSION: Among primary care patients with CAD or CHF within a single large academic care network, Hispanic patients at high HP practices have higher rates of cardiologist consultation compared to Hispanic patients at LP practices. Elucidating the essential components of individual practice environments that provide higher quality of care for Hispanics will allow for well designed systems to reduce health care disparities.

Low Socioeconomic Status is Associated with Increased Frequency of Hospitalizations and Acute Care Visits for Treatment of Vaso-occlusive Pain Crises among Adult Patients with Sickle Cell Disease Charles Richard Jonassaint¹; Mary Catherine Beach¹; Sophie Lanzkron¹; Carlton Haywood¹. ¹Johns Hopkins University, Baltimore, Maryland . (Proposal ID # 12179)

BACKGROUND: Sickle cell disease (SCD) is associated with a disproportionately high rate of morbidity and mortality. The chronicity of SCD is a substantial burden to patients and requires considerable self-management. Social and economic disadvantage may hinder patients' ability to self-manage their SCD and negatively impact patients' health. Few studies have examined the role of socioeconomic status (SES) in health care utilization in this population. Therefore, the aim of the current study was to assess the association of patients' SES with frequency of hospitalizations and acute care encounters, independent of disease severity.

METHODS: We recruited patients with documented SCD who received care at an urban academic medical center from September 2006 to June 2007. Patients were recruited from the adult sickle cell and hematology outpatient clinic, the emergency department (ED), the inpatient units, or within 5 days following hospital discharge. Out of 96 patients who were approached, 95 patients with SCD (64% HbSS disease), aged 20-64 (mean=34) participated. Socioeconomic status was assessed using four categorical demographic variables: education (<high school, high school/GED, some college, college or beyond), annual household income (<\$10,000 and ≥\$10,000), current employment (employed/unemployed) and receipt of disability (yes/no). Outcomes variables were the number of hospitalizations over the past year (log transformed) as documented in the patient's medical record and the patient's self-report of their annual number of vaso-occlusive crises that require a hospital visit (<3 and 3+). Logistic regression and multiple linear regression were used to test for the association among SES indicators and binary or continuous outcome variables, respectively. Analyses included covariates for age, sex and clinical variables: patient's genotype (HbSS vs. other), number of non-sickle related comorbidities (diabetes, hypertension, HIV, hepatitis B, or hepatitis C), and number of sickle-related comorbidities (acute chest syndrome, a vascular necrosis, renal disease, pulmonary hypertension, or iron overload).

RESULTS: After adjusting for covariates, patients with at least a college level education experienced an average of 1.29 (SD=1.01) hospitalizations compared to an average of 5.81 (SD=6.06) hospitalizations for patients who did not complete high school ($\hat{\beta}=-.73$; $p<.01$). Further, patients with a higher education were 7.4 times more likely to report having fewer than 3 pain crises requiring hospitalization a year ($p=.038$). Similarly, when examining income, patients with a household income greater than \$10,000 a year had fewer hospitalizations ($\hat{\beta}=-.50$; $p<.01$) and pain crises requiring hospitalization (OR=.23, $p=.015$) than patients with a household income less than \$10,000. Employed patients also experienced fewer hospitalizations than unemployed patients ($\hat{\beta}=-.36$; $p=.04$). Receipt of disability was not associated with hospital utilization after adjusting for age, sex and clinical variables.

CONCLUSION: Findings from this study suggest that SES is inversely associated with health care utilization. These effects were consistent when accounting for age, sex, genotype, and clinical comorbidities. However, the causal direction of the relationship between hospital utilization and SES cannot be confirmed in this cross-sectional study. Nonetheless, assessing SES may help identify patients who are at "high risk" for poor outcomes. By appropriately identifying risk factors for poor health outcomes, we will be able to tailor and personalize care plans to the specific needs of each patient with the goal of improving patient self-management and disease outcomes.

Factors Associated with Hepatitis B Screening in a Population-based Survey of Korean Americans from Washington State Adeena Khan¹; Genji Terasaki²; Joon-Ho Yu²; John H Choe². ¹University of Washington, Internal Medicine Residency Program, Seattle, Washington ; ²University of Washington, Seattle, Washington . (Proposal ID # 12311)

BACKGROUND: Approximately 1.3 million Americans live with chronic hepatitis B (HBV) viral infection. Because chronic HBV infection is frequently acquired in childhood and often causes little or no symptoms, infected adults may be unaware of their risk for the future sequelae of cirrhosis and liver cancer. Therefore, public health experts including those at the Centers for Disease Control and Prevention have recommended screening immigrants from regions with high rates of endemic HBV for serologic evidence of chronic infection. Although Asians represent less than one in 20 of the US population, they comprise more than one in two of those living with chronic HBV infection in this country.

While it has been estimated that more than 4% of adults older than 40 years of age residing in Korea are chronically infected with HBV, little has been reported about the factors associated with serologic testing in Koreans living here in the United States. Previous research has identified factors associated with HBV screening in certain other Asian American subgroups; however, few studies have specifically examined Koreans, the fifth largest Asian ethnic group in the US.

In this study, we examined data from a survey of Korean American adults to determine factors associated with HBV screening in this population. Based on prior studies in other Asian American populations, we hypothesized that participant demographics (e.g. age); factors related to access to medical care (e.g. health insurance); and factors related to communication with providers (e.g. requiring medical interpreters) all would potentially be associated with HBV screening in Korean Americans.

METHODS: Eligible study participants were Korean adults 18-64 years of age. Potential participants were identified by surname from an electronic database of telephone numbers and addresses from three counties in Western Washington State. Study staff made up to five separate contact attempts with potential participants, and bilingual and bicultural field interviewers conducted in-person surveys in either Korean or English lasting approximately a half hour at participants' homes. The HBV survey was developed by adapting a questionnaire previously used in Chinese and Vietnamese American communities; our previous qualitative research among Koreans had identified additional cultural domains potentially influencing HBV testing, and these pilot data were used to expand included questions.

Our primary outcome of interest was self-report of having had prior serologic HBV testing. We examined whether three groups of variables were associated with having had HBV testing. First, we examined whether testing was associated with participant demographic factors, such as age, gender, marital status, and birth country. Second, we examined whether testing was associated with factors related to access to medical care, including: identifying a regular primary medical provider; having health insurance and type of insurance; and receiving medical care at one location. Third, we examined whether HBV testing was associated with factors related to language and communication, including: English proficiency; dependence on medical interpreters; and ethnicity of medical providers. Bivariate comparisons were examined using appropriate chi-squared or t-test statistics; we also constructed multivariate logistic regression models to examine which factors were independently associated with having had HBV testing.

RESULTS: Four hundred and sixty-six participants completed the survey, with the vast majority in Korean language (91%). Among participants, nearly all were born in South Korea (93%) and had resided in the US for less than 20 years. More than half (58%) of survey participants were women, and four out of five (80%) were married. The level of education was high, with three quarters reporting having completed at least high school or more. Around half (49%) reported having had previous HBV serologic testing, but almost all (94%) had heard of hepatitis B.

Access to medical care was variable among participants, with more than a third (38%) reporting they were without health insurance, and nearly half (43%) without a regular doctor or medical provider. More than a quarter (27%) reported requiring assistance with language interpretation during physician visits.

Most access and communication factors were not significantly associated with having had HBV serologic testing in bivariate analyses among these Korean American adults. Participants with health insurance or a regular primary care physician were not more likely to have had HBV testing than those without insurance or primary care; there was a trend toward significant association of HBV testing for those identifying a physical site of receiving medical care ($p=0.07$). Such communication factors as strong English speaking skills or use of medical interpreters were also not associated with having had HBV testing.

In multivariate logistic regression models, length of time residing in the US was independently but negatively associated with reporting having had HBV testing ($p=0.049$); that is, controlling for other demographic, health care access, and communication factors, increased time of US residence was associated with lower rates of having had HBV testing.

CONCLUSION: In our population-based survey of Korean American adults, we found that most demographic, health care access, and communication factors were not associated with reporting having had HBV serologic testing. However, in multivariate models, increased length of time residing in the US was negatively associated with HBV serologic testing. Contrary to our expectation, those Koreans who have been living longest in the US were least likely to report having had HBV serologic testing, even after controlling for participant age or insurance status.

Health programs focused upon immigrants often target the most recent arrivals as the most vulnerable and the most requiring of special efforts to bridge disparities of care and of health outcomes. However, for hepatitis B serologic testing, these survey data suggest that the less recently immigrated Korean Americans remain a group at increased need for targeted attention. For primary care providers, HBV serologic testing to identify those at risk for cirrhosis and liver cancer remains an important priority not only for recent Korean immigrants, but especially for those who have already resided in the US for years or decades.

Disparities in Care Between Primary Care Clinics Serving Minority Versus Non-minority Patients Anita Varkey¹; Linda Baier Manwell²; Said Ibrahim³; Mark Schwartz⁴; Roger Brown²; Diana Burgess⁵; Enid Montague²; Eric Williams⁶; Jacqueline Wiltshire⁷; Sara Poplau⁸; Mark Linzer¹⁰. ¹Loyola University Medical Center, Oak Park, Illinois ; ²University of Wisconsin, Madison, Wisconsin ; ³University of Pennsylvania, Philadelphia, Pennsylvania ; ⁴New York University, VA NY Harbor Healthcare, New York, New York ; ⁵Minneapolis VA Medical Center, Minneapolis, Minnesota ; ⁶University of Alabama, Tuscaloosa, Alabama ; ⁷Florida A & M University, Tallahassee, Florida ; ⁸Hennepin County Medical Center, Minneapolis, Minnesota . (Proposal ID # 12376)

BACKGROUND: Racial disparities in health care may be in part due to variations in sites where patients receive primary care. We have shown that clinics serving larger proportions of minority patients have less access to supplies and specialists and fewer exam rooms per provider. Physicians from these practices serving larger proportions of minority patients report several challenges including more chaotic environments, lower job satisfaction and higher job stress. Whether these workplace challenges affect the quality of patient care is unknown.

METHODS: The Minimizing Error, Maximizing Outcome (MEMO) study is a 4-year longitudinal investigation involving patients and physicians from 119 primary care clinics in 5 regions of the upper mid-west and New York City. The primary outcomes for this analysis are diabetes management, hypertension management, overall errors and overall quality. Diabetes management is defined as a Hemoglobin A1c $\leq 7.5\%$ for $\geq 50\%$ of recorded measurements and hypertension management as blood pressure $< 140/90$ for $\geq 50\%$ of recorded measurements. We calculated a quality score that assigned a single point for each element of disease control according to national guidelines. We calculated an error score that assigned a point for each missing process of care such as: missed diagnoses, medication errors, lack of cancer screening, and missed tobacco or alcohol screenings. We normalized scores to a range of 0 to 100 by dividing the number of quality or error points by the number of applicable items and multiplying by 100.

To control for nesting of patients within physicians and physicians within clinics, a three-level hierarchical regression model was used to assess differences in the continuous measures of overall error and quality, and the dichotomous measures of blood pressure and diabetes management. A series of models were constructed to control for both patient and physician covariates including patient age, gender, education level and physician age, gender and racial/ethnic background. Adjusted means and proportions are subsequently reported for clinics serving $\geq 30\%$ minority patients (MCs) in comparison to clinics serving mainly non-minority patients (NMCs).

RESULTS: In 73 clinics (26 minority, 47 non-minority), there were 287 clinicians and 1207 patients with complete data and the tracer conditions of diabetes and hypertension. Diabetes management (A1c $< 7.5\%$) was less effective in MCs than NMCs (63% controlled vs. 79%, effect size = 0.35, $p < 0.005$). Furthermore, the overall error rate was higher in MCs (39.5% of total possible errors committed vs. 33.5%, effect size = 0.32, $p < 0.05$). Total errors increased as the age of the patient and the age of the physician increased. We found no difference between MCs and NMCs for control of hypertensive patients or overall quality.

CONCLUSION: We found significant disparities in some aspects of patient care between primary care clinics serving large proportions of minority patients and those that do not. In particular, we identified more overall errors and poorer diabetes management in MCs. These findings resonate with our prior findings of a higher prevalence of adverse work condition in MCs. Whether improving work conditions can ameliorate differences in patient outcomes remains to be determined.

Improving Understanding of Rx Instructions among Patients with Limited English Proficiency Stacy Cooper Bailey¹; Dean Schillinger²; Alice Chen³; Urmimala Sarkar³; Emily Larsen¹; Michael Wolf¹.
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BACKGROUND: Approximately nine percent of the US population has limited English proficiency (LEP). Previous studies suggest that pharmacies often fail to provide language concordant prescription drug labeling to non-English speaking patients; this lack of language access can have serious effects on LEP patients' ability to safely administer medications. The objective of this study was to determine if a set of evidence-based, multilingual prescription drug (Rx) instructions improves medication understanding among individuals with limited English proficiency (LEP) in comparison to a current, nationally-available standard.

METHODS: Face-to-face interviews were conducted with 122 LEP adults recruited into the study from either clinic or community-based organizations in San Francisco, CA or Chicago, IL. Participants were randomized to receive five Rx bottles with either: 1) language-concordant Rx instructions currently generated by a major, national chain pharmacy or 2) enhanced, language-concordant Rx instructions. Enhanced Rx instructions were created utilizing health literacy and translation best practices; this approach used the Universal Medication Schedule (UMS) to ground medication-taking to four distinct times of day (morning, noon, evening and bedtime). Participants were asked to read each container label and to demonstrate how they would dose the medicine according to the instructions provided.

RESULTS: Patient understanding of Rx instructions ranged from 48% for the least understood to 96% for the most commonly understood instruction. Patients were significantly more likely to understand enhanced instructions compared to standard instructions (73% vs. 58%, $p < 0.001$). In multivariate analyses that included instruction type, age, sex, language spoken, educational attainment, study site, and number of Rx drugs currently taken, instruction type remained a significant, independent predictor of understanding, with enhanced instructions being significantly more likely to be understood compared to standard instructions (odds ratio (OR) 1.91, 95% confidence interval (1.32, 2.77), $p = 0.001$).

CONCLUSION: Providing clear, language-concordant Rx labeling is essential to promote safe and appropriate medication use among LEP populations. The enhanced Rx instructions developed and tested in this study show promising results and were designed to be easily implemented in pharmacy practice. State legislatures, State Boards of Pharmacy and the National Association of Boards of Pharmacy should consider promoting the use of this standardized, enhanced set of multilingual Rx instructions as a first step towards providing language access for LEP patients in pharmacy practices.

The influence of perceived racial discrimination on the adoption of healthy lifestyle behaviors in hypertensive African Americans: The CAATCH Trial. Jessica M. Forsyth¹; Antoinette Schoenthaler¹; Joseph Ravenell¹; Gbenga Ogedegbe¹. ¹NYU School of Medicine, New York, New York . (Proposal ID # 12532)

BACKGROUND: Adverse lifestyle behaviors such as poor physical activity and poor fruits and vegetable intake are more prevalent in African Americans compared to Whites. Several studies have confirmed the negative relationship between adverse lifestyle behaviors and hypertension in African Americans. The efficacy of interventions targeting therapeutic lifestyle change (TLC) in controlling blood pressure (BP) among African Americans is well proven. However, few studies have examined the psychosocial factors that influence the adoption of healthy lifestyle behaviors in these studies. Perceived racial discrimination is an important psychosocial factor that has been associated with poor health outcomes in African Americans; its effect on adoption of healthy lifestyle behaviors remains untested. In this study, we examined the influence of perceived discrimination on the adoption of healthy lifestyle behaviors among hypertensive African Americans followed in community-based primary care practices.

METHODS: Participants were 461 patients enrolled in the Counseling African American To Control Hypertension (CAATCH) trial. The objective of CAATCH was to evaluate, in a cluster-randomized trial, the effectiveness of a multilevel intervention targeted at physicians and patients for improving blood pressure (BP) control in hypertensive African Americans who receive care in under-served community health centers. Analysis for the present study was limited to participants in the intervention arm. The dependent variables were the lifestyle behaviors - physical activity level assessed with the Paffenbarger Physical Activity Questionnaire, with higher kilocalories expended per week indicating greater physical activity; healthy eating habit was assessed with the diet items of the Rapid Eating and Activity Assessment for Patients measure (REAP), with higher scores indicating healthier eating habits and BP was based on the average of three BP measurements taken with a well-validated automated device (BPTru). The independent variable, perceived racial discrimination, was assessed with the lifetime, past year and stress scales of the Schedule of Racist Events questionnaire, with higher scores indicating more frequent exposure to perceived discrimination. All assessments were conducted at baseline and 12 months with change measures from baseline to 12 months for each dependent variable taken as the outcomes. Regression analyses were used to examine the associations between perceived discrimination and the within-patient change in each of the three outcome measures from baseline to 12 months while controlling for age, income and education level.

RESULTS: Most patients were low-income and had a high school education, with a mean age of 57 years. Age was associated with greater reduction in systolic BP ($\hat{\beta} = -.13, p = .02$); greater exposure to lifetime discrimination was associated with less reduction in systolic BP ($\hat{\beta} = .14, p = .02$) and lower adoption of healthy eating behaviors ($\hat{\beta} = -.20, p = .004$). Discrimination was associated with lower adoption of healthy eating behaviors ($\hat{\beta} = -.17, p = .02$). There were no significant associations between discrimination and change in physical activity.

CONCLUSION: Perceived discrimination influenced the adoption of healthy lifestyle behaviors and reduction of systolic BP in low-income African American patients, but did not influence adoption of physical activity. This study provides evidence that exposure to discrimination may influence African Americans' ability to adopt healthy lifestyle behaviors and should be considered in the development of future interventions.