Title:
Impact of Individual and Neighborhood Factors on Cardiovascular Risk in White Hispanic women and men compared to White non-Hispanic women and men

Tanya Marie Cohn, PhD, MEd
Nursing and Health Sciences Research, Baptist Health South Florida, Fort Lauderdale, FL, USA

References:
Abeyta, I.M., Tuitt, N.R., Byers, T.E., & Sauaia, A. Effect of community affluence on the association between individual socioeconomic status and cardiovascular disease risk factors, Colorado, 2007-2008. Preventing Chronic Disease, 9. Alvarez, K.J., & Levy, B.R. (2012). Health advantages of ethnic density for African American and Mexican American elderly individuals. American Journal of Public Health, 102(12), 2240-2042. American Heart Association (AHA). (2012). Heart attack risk assessment. Retrieved from http://www.heart.org/HEARTORG/Conditions/HeartAttack/HeartAttackToolsResources/Heart-Attack-Risk-Assessment_UCM_303944_Article.jsp. Aviles-Santa, L., Salinas, K., Adams-Huet, B., & Raskin, P. (2006). Anthropometric features and cardiovascular risk in young Latin Americans with type 2 diabetes mellitus. Journal of Diabetes Complications, 20(2), 69-74. Baptist Health South Florida (BHSF). (2013). Community health needs assessment: Fall 2013. Retrieved from http://baptisthealth.net/en/about-baptist-health/Pages/community-health-needs-assessments.aspx. Boykin, S., Diez-Roux, A.V., Carnethon, M., Shrager, S., Ni, H., & Whitt-Glover, M. (2011). Racial/ethnic heterogeneity in the socioeconomic patterning of CVD risk factors in the United States: The multi-ethnic study of atherosclerosis. Journal of Health Care for the Poor and Underserved, 22(1), 111-127. Centers for Disease Control and Prevention (CDC). (2013). Heart disease facts. Retrieved from http://www.cdc.gov/heartdisease/facts.htm. Center for Disease Control and Prevention (CDC). (2012). Cholesterol facts: America's cholesterol burden. Retrieved from http://www.cdc.gov/cholesterol/facts.htm. Centers for Disease Control and Prevention. (CDC). (2012). Heart disease fact sheet. Retrieved from http://www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_heart_disease.htm. Centers for Disease Control and Prevention. (CDC). (2011). Vital signs: Prevalence, treatment, and control of high levels of low-density lipoprotein cholesterol—United States, 1999-2002 and 2005-2008. Morbidity and Mortality Weekly Report. 60(4), 109-114. Centers for Disease Control and Prevention (CDC). (2010). Heart disease and stroke prevention. Retrieved from http://www.cdc.gov/chronicdisease/resources/publications/AAG/dhdsp.htm. Cortes-Bergoderi, M., Thomas, R.J., Albuquerque, F.N., Batsis, J.A, Burdiat, G., Perez-Terzic, C…Lopez-Jimenez, F. (2012). Validity of cardiovascular risk prediction models in Latin America and among Hispanics in the United States of America: A systematic review. Rev Panam Salud Publication, 32(2), 131-139. D'Agostino, R.B., Vasan, R.S.; Pencina, M.J., Wolf, P.A., Cobain, M., Massaro, J.M., Kannel, W.B. (2008). General cardiovascular risk profile for use in primary care: The Framingham heart study. Circulation, 117, 743-753. Davidson, J.A., Moreno, P.R., Badimon, J.J., Lopez-Candales, A., Maisonet Giachello, A.L., Ovalle, F…Kannel, W.B. (2007). Cardiovascular disease prevention and care in Latino and Hispanic subjects. Endocrine Practice, 13(1), 77-85. Daviglus, M.L., Talavera, G.A, Aviles-Santa, M.L., Allison, M., Cai, J., Criqui, M.H….Stamler, J. (2012). Prevalance of major cardiovascular risk factors and cardiovascular

diseases among Hispanic/Latino individuals of diverse backgrounds in the United States. JAMA, 308(17), 1775-1783. Derby, C.A., Wildman, R.P., McGinn, A.P., Green, R.R., Polotsky, A.J., Ram, K.T…Santoro, N. (2010). Cardiovascular risk factors variation within a Hispanic cohort: SWAN, the study of women's health across the nation. Ethnicity & Disease, 20, 397-402. Do, D.P., Dubowitz, T., Bird, C.E., Lurie. N., Escarce, J.J., & Finch, B.K. (2007). Neighborhood context and ethnicity differences in body mass index: A multilevel analysis using the NHANES III survey (1988-1994). Economics Human Biology, 5, 179-203. DuBard, C.A. & Gizlice, Z. (2008). Language spoken and differences in health status, access to care, and receipt of preventive services among US Hispanics. American Journal of Public Health, 98(11), 2021-2028. Eamranond, P.P., Legedza, A.T.R., Diez-Roux, A.V., Kandula, N.R., Palmas, W., Siscovick, D.S., Mukamal, K.J. (2009a). Association between language and risk factor levels among Hispanic adults with hypertension, hypercholesterolemia, or diabetes. American Heart Journal, 157(1), 53-59. Eamranond, P.P., Wee, C.C., Legedza. A.T., Marcantonio, E.R., & Leveille, S.G. (2009b). Acculturation and cardiovascular risk factor control among Hispanic adults in the United States. Public Health Report, 124(6), 818-824. Fiscella, K., Tancredi, D., & Franks, P. (2009). Adding socioeconomic status to Framingham scoring to reduce disparities in coronary risk assessment. American Heart Journal, 157(6), 988-994. Franks, P., Tancredi, D.J., Winters, P.C., & Fiscella, K. (2010). Including socioeconomic status in coronary heart disease risk estimation. Annals of Family Medicine, 8(5), 447-453. Franks, P., Winters, P.C., Tancredi, D.J., & Fiscella, K. (2011). Do changes in traditional coronary heart disease risk factors over time explain the association between socioeconomic status and coronary heart disease? BMC Cardiovascular Disorders, 11(28), 1-6. Fuentes-Afflick, E. & Hessol, N.A. (2009). Immigration status and use of health services among Latina women in the San Francisco bay area. Journal of Women's Health, 18(8), 1275-1278. Go, A.S., Mozaffarian, D., Rogers, V.L., Benjamin, E.J., Berry, J.D., Blaha, M.J…Turner, M.B. (2014). Heart disease and stroke statistics—2014 update: A report from the American Heart Association. Circulation, 129, e28-e292. Go, A.S., Mozaffarian, D., Rogers, V.L., Benjamin, E.J., Berry, J.D., Borden, W.B.…Turner, M.B. (2013). Heart disease and stroke statistics—2013 update. Circulation, 127, e6-e245. Harari, N., Davis, M., & Heisler, M. (2008). Strangers in a strange land: Health care experience for recent Latino immigrants in Midwest communities. Journal of Health Care for Poor and Underserved, 19(4), 1350-1367. Heron, M. (2012). Deaths: Leading causes for 2009. National Vital Statistics Reports, 61(7), 1-96. Herrera, V.M., Casas, J.P., Miranda, J.J., Perel, P., Pichardo, R., Gonzalez, A…Bautista, L.E. (2009). Interethnic differences in the accuracy of anthropometric indicators of obesity in screening for high risk of coronary heart disease. International Journal of Obesity, 33(5), 568-576. Hsia, J., Barad, D., Margolis, K., Rodabough, R., McGovern, P.G., Limacher, M.C.…Smoller, S. (2003). Usefulness of prior hysterectomy as an independent predictor of Framingham risk score (The women's health initiative). American Journal of Cardiology, 92(3), 264-269. Laing, S.T., Simulevitz, B., Vatcheva, K.P., Rentfro, A.R., McPherson, D.D., Fisher-Hoch, S.P., & McCormic, J.B. (2012). High prevalence of subclinical atherosclerosis by carotid ultrasound among Mexican Americans: Discordance with 10-year risk assessment using the Framingham risk score. Echocardiography, 1-16. Lee, M.J., Liechty, J.M., & Choi, S. (2014). Longitudinal associations between ethnic enclaves, neighborhood processes, and Latino immigrant youth depression. Society for Social Work and Research Annual Conference, San Antonio, TX. Leslie, E., Cerin, E., & Kramer, P. (2010). Perceived neighborhood environmental and park use as mediators of the effect of area socioeconomic status on walking behaviors. Journal of Physical Activity Health, 7, 802-810. Levine, L. (2012). The distribution of household income and the middle class. Congressional Research Service Report for Congress retrieved from https://www.fas.org/sgp/crs/misc/RS20811.pdf. Link, B.G. & Phelan, J.C. (1995). Social conditions as fundamental causes of disease. Journal of Health and Social Behavior (extra issue), 80-94. Lloyd-Jones, D.M. (2010). Risk prediction in cardiovascular medicine: Cardiovascular risk prediction: Basic concepts, current status, and future directions. Circulation, 121, 1768-1777. Lloyd-Jones, D., Adams, R., Carnethon, M., De Simone, G., Ferguson, T. B., & Flegal, K. (2009). Heart disease and stroke statistics 2009 update: A report from the American Heart Association statistics committee and stroke statistics subcommittee. JAHA Circulation, 119, e21-e181. Lui, X., Liu, M., Tsillimingras, D., & Schiffrin, E.L. (2011). Racial disparities in cardiovascular risk factors among diagnosed hypertensive subjects. Journal of American Society of Hypertension, 5(4), 239-248. Matheny, M,, McPheeters, M.L., Glasser, A., Mercaldo, N., Weaver, R.B., Jerome, R,N…Tsai, C. (2011). Systematic review of cardiovascular disease risk assessment tools. Evidence Synthesis/Technology Assessment Report No. 85. Rockville, MD: Agency for Healthcare Research and Quality. Nandi, A., Galea, S., Lopez, G., Nandi, V., Strongarone, S., & Ompad, D. C. (2008). Access to and use of health services among undocumented Mexican immigrants in a US

urban area. American Journal of Public Health, 98(11), 2011-2020. Padilla, R., Steiner, J.F., Havranek, E.P., Beaty, B., Davidson, A.J., & Bull, S. (2011). A comparison of different measures of acculturation with cardiovascular risk factors in Latinos with hypertension. Journal of Immigrant Minority Health, 13, 284-292. Phelan, J.C., Link, B.G., Diez-Roux, A., Kawachi, I., & Levin, B. (2004). "Fundamental causes" of social inequalities in mortality: A test of the theory. Journal of Health and Social Behavior, 45(September), 265-285. Pollack, C.E., Slaughter, M.E., Griffin, B.A., Dubowitz. T., & Bird, C.E. (2012). Neighborhood socioeconomic status and coronary heart disease risk prediction in a nationally representative sample. Public Health, 126(10), 827-835. Roger, V.L., Go, A.S., Lloyd-Jones, D.M., Benjamin. E.J., Berry, J.D., Borden, W.B…Turner, M.B. (2012). Executive Summary: Heart disease and stroke statistics—2012 update: A report from the American Heart Association. Circulation, 125(1), 188-197. Salinas, J. J., Abdelbary, B., Wilson, J., Hossain, M., Fisher-Hoch, S., & McCormick, J. (2012a). Using the Framingham Risk Score to evaluate immigrant effect on cardiovascular disease risk in Mexican Americans. Journal of Health Care for the Poor and Underserved, 23(2), 666-677. Salinas, J.J., Rocha, E., Abdelbury, B.E., Gay, J., & Sexton, K. (2012b). Impact of Hispanic ethnic concentration and socioeconomic status on obesity prevalence in Texas counties. International Journal of Environmental Research and Public Health, 9, 1201-1215. Shikany, J.M., Tinker, L.F., Neuhouser, M.L., Ma, Y., Patterson, R.E., Phillips, L.S…Redden, D.T. (2010). Association of glycemic load with cardiovascular disease risk factors: The Women's Health Initiative Observational Study. Nutrition, 26(6), 641-647. Stark Casagrande, S., Fradkin, J.E, Saydah, S.H., Rust, K.F., & Cowie, C.C. (2013). The prevlance of meeting Alc, blood pressure, and LDLD goals among people with diabetes, 1988-2010. Diabetes Care, 36, 2271-2279. The Office of Minority Health. (2011). Diabetes and Hispanic Americans. Retrieved from http://minorityhealth.hhs.gov/templates/content.aspx?ID=3324. United States Census Bureau. (2012). 2010 Census Bureau Summary File 2: 2010 Census of population and housing. U.S. Washington, D.C.:Department of Commence. Retrieved from http://www.census.gov/prod/cen2010/doc/sf2.pdf. Van Wierer, A.J., Roberts, M.B., Arellano, N., Feller, E.R., & Diaz, J.A. (2011). Acculturation and cardiovascular behaviors among Latinos in California by county/region of origin. Journal of Immigrant Minority Health, 13(6), 975-981. Willey, J.Z., Rodriguez. C.J., Carlino. R.F., Moon, Y.P., Paik, M.C., Boden-Albala, B…Elkind. M.S. (2011). Race-ethnic differences in the association between lipid profile components and risk of myocardial infarction: The northern Manhattan study. American Heart Journal, 161(5), 886-892. Yala, S.M., Fleck, E.M., Sciacca, R., Castro, D., Joseph, Z., & Giardina, E.V. (2009). Metabolic syndrome and the burden of cardiovascular disease in Caribbean Hispanic women living in northern Manhattan: A red flag for education. Metabolic Syndrome and Related Disorders, 7(4), 315-322. Yusuf, S., Caims, J., Camm, J., Fallen, E.L., & Gersh, B.J. (2011). Evidence-based cardiology (3rd ed.). Hoboken: John Wiley & Sons. Zhang, H. & Rodriquez-Monguio, R. (2012). Racial disparities in the risk of developing obesity-related diseases: A cross-sectional study. Ethnic Disparities, 22(3), 308-316.

Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE	TIME ALLOTTED	FACULTY/SPEAKER	TEACHING/LEARNING METHOD	EVALUATION/FEEDBACK
Example Critique selected definition of the term,	**Example** Definitions of "curriculum" Course of	**Example** 20 minutes	**Example** Name, Credentials	**Example** Lecture PowerPoint presentation Participant feedback	**Example** Group discussion: What does cultural training mean to you?

"curriculum"	study Arrangements of instructional materials The subject matter that is taught Cultural "training" Planned engagement of learners				
Compare individual level factors, neighborhood level factors, cardiac risk, and cardiac mortality between White Hispanic women and men and White non-Hispanic women and men.	Data analysis assessing differences between White Hispanic women, White Hispanic men, White non-Hispanic women, and White non-Hispanic men.	20 minutes	Tanya Cohn, MSN, MEd., RN	Poster	Group/Individual Discussion: How do individual level factors, neighborhood level factors, and cardiac risk differ between White Hispanic women, White Hispanic men, White non-Hispanic women, and White non-Hispanic men.
Describe the relationships between neighborhood level	Define cardiac risk and how to calculate the 10-year	30 minutes	Tanya Cohn, MSN, MEd., RN	Poster	Group/Individual Discussion: What is cardiac risk? What are the relationships between neighborhood level factors, cardiac risk,

factors, cardiac risk, and cardiac mortality for White Hispanic women, White Hispanic men, White non-Hispanic women, and White non-Hispanic men.	General Cardiovascular Risk score. Data analysis assessing relationships between neighborhood level factors, cardiac risk, and cardiac mortality for White Hispanic women, White Hispanic men, White non-Hispanic women, and White non-Hispanic men.				and cardiac mortality for White Hispanic women, White Hispanic men, White non-Hispanic women, and White non-Hispanic men?

Abstract Text:

Cardiovascular disease (CVD) is the leading cause of mortality for adults in the United States regardless of ethnicity. Yet, cardiac and noncardiac-related risk factors vary by ethnicity, as does mortality rate. Specifically, Hispanics in the United States have a higher prevalence of risk factors compared to non-Hispanic Whites, but lower overall cardiovascular-related mortality rate (Daviglus et al., 2012). This unexplained difference in risk versus mortality argues the need for the ability to accurately assess cardiovascular risk in order to provide appropriate treatment plans, medication, and behavioral interventions. This disparity suggest that other factors may be contribute to or protect against cardiovascular mortality. Therefore, a descriptive cross-sectional correlational design was used to describe, compare, and predict cardiovascular risk and mortality in White Hispanic women, White Hispanic men, White non-Hispanic women, and White non-Hispanic men. This included calculating the sex-specific 10-year General Cardiovascular Risk Score (FRS-10) and collecting individual-level factors (demographic characteristics; personal socioeconomic status [PSES]), individual-level non-FRS-10 cardiovascular disease risk factors (diastolic blood pressure, LDL, triglycerides, HbAlc, body mass index), and neighborhood-level factors (neighborhood socioeconomic status [NSES]; Hispanic ethnic concentration). Secondary data from an archival database from five adult hospitals within a Southeastern

hospital system from 2012 – 2013 along with national data from the 2010 US Census and Floridacharts.org was used. A total of 3,317 individuals were included in this study with 1,523 being women and 1,794 being men. Approximately two-thirds of the sample was White Hispanics (77.5%) compared to White non-Hispanics (22.5%). FRS-10 risk was statistically significantly different across the four subgroups (p < .001) with White Hispanic women having less cardiac risk compared to White Hispanic men (p < .001) and White non-Hispanic men (p < .001). White Hispanic women had statistically significantly higher total cholesterol compared to White non-Hispanic women (p=.013) and White non-Hispanic men (p=.031). White Hispanic women also had statistically significantly higher LDL compared to White non-Hispanic women (p=.007) and White non-Hispanic men (p=.005). Pearson correlations showed that percentage Hispanics in a neighborhood had a statistically significant positive relationship with FRS-10 for White Hispanic women (r=-.08; p=.010) and White Hispanic men (r=.07; p=.013) compared to White non-Hispanic women (r=.08; p=.148) and White non-Hispanic men (r=.08; p=.131). Statistically significant positive relationships were found for all four subgroups between percentage of Hispanics in neighborhood and CVD mortality at the p < .001 level. Median household income had a statistically significant negative relationship with CVD mortality for all four subgroups at the p < .001 level. Thus, in this study, it was found that regardless of whether individuals were White Hispanic or White non-Hispanic as percentage of Hispanics in a neighborhood increased so did cardiovascular morality. Furthermore, as median household income decreased cardiovascular disease mortality increased. Implications for practice and research include: (1) expanding cardiac assessment to include neighborhood level factors in order to prescribe preventative and interventional measures for individuals regardless of their estimated cardiovascular disease risk based on typical cardiovascular risk factors; (2) more in depth prospective research should be conducted to better evaluate Hispanic neighborhood concentration, acculturation, cardiovascular risk, and cardiovascular mortality; and (3) neighborhood level cardiovascular disease risk assessment and interventions should be conducted with the potential goal of reducing a community's risk in order to impact a larger majority of those at cardiovascular disease risk.