Sigma's VIRTUAL 31st International Nursing Research Congress (Wednesday, 22 July - Friday, 24 July)

Depression Mediate the Relationship Between Social Status and Chronic Pain for Whites, but Not Blacks

Edwin N. Aroke, PhD, CRNA[1]
Pamela Jackson, BSN, BS, MLT, RN[1]
Demario S. Overstreet, MS[2]
Terence M. Penn, MA[2]
Tammie Quinn, BS[2]
Andrew M. Sims, BS[3]
D. Leann Long, PhD[3]
Burel R. Goodin, PhD[2]
(1)School of Nursing, University of Alabama at Birmingham, Birmingham, AL, USA
(2)Department of Psychology, University of Alabama at Birmingham, Birmingham, AL, USA
(3)Department of Biostatistics, University of Alabama at Birmingham, Birmingham, AL, USA

Purpose: Globally, low back pain is the leading cause of disability, affecting all segments of the population.[1] In the United States of America, compared with non-Hispanic Whites, non-Hispanic Blacks report more severe and disabling chronic low back pain (cLBP).[2] Although racial differences in cLBP are widely reported, much remains to be known about the nature of the relationship between predictors of pain outcomes. Multiple biopsychosocial variables contribute to differences in pain, including demographics, genetics, mental health, and socioeconomic status.[3-5] This study investigated whether depressive symptoms mediate the relationship between subjective social status and pain outcomes (pain interference and pain severity) among Black and White adults with cLBP.

Methods: 57 Blacks and 48 Whites with cLBP were recruited through advertisement in a pain clinic. Self-identified race, the Brief Pain Inventory, the Center for Epidemiologic Studies Depression Scale, and the MacArthur Scale of Subjective Social Status were used. **D**ata were analyzed using SPSS version 24. SPSS macro PROCESS was used to test the moderation effect of race on the relationship between subjective social status and pain outcomes (model 1), and the indirect effect of subjective social status on pain outcomes via depressive symptoms for Blacks and Whites with cLBP (model 4).[6] 95% bootstrapped confidence intervals were generated (with 10000 samples) to estimate the direct and conditional indirect effects.

Results: On average, Blacks reported significantly higher pain severity [5.57 (SD = 2.27) versus 3.99 (SD = 1.99)] and interference [4.12 (SD = 2.65) versus 2.95 (SD= 2.13)] scores than Whites participants ($p < 0.05$). Race moderated the relationship between subjective social status and both pain interference (boots 95% CI [-0.996, -0.135]) and pain severity (boots 95% CI [-0.579, 0.335]). For White participants, a 1 unit increase in subjective social status correlated with 0.47 and 0.19 units decrease in pain interference, and pain severity respectively. However, for Black participants, a 1 unit increase in subjective social status correlated with 0.12 units increase and 0.04 units

decrease in pain interference and pain severity, respectively. We then evaluated whether depressive symptoms mediate the relationship between subjective social status and pain outcomes for each group. Among Whites participants, depressive symptoms significant mediated the effect subjective social status on pain outcomes, accounting for 40% and 16% of the variance in pain interference (p= 0.001) and severity (p=0.03), respectively. For White with cLBP, higher subjective social status correlated with lower depressive symptoms, which in turn correlate with lower pain severity and pain interference. However, for Black, depressive symptoms did not significant mediate the relationship between subjective social status and both pain interference (p = 0.72) and pain severity (p = 0.71). For Blacks with cLBP, higher social status correlated with higher depressive symptoms, which associated with higher pain interference and a slightly lower pain severity.
Conclusion: The findings suggest that subjective social status appears to confer mental health and chronic pain benefits for White, but not Black participants.

Title:
Depression Mediate the Relationship Between Social Status and Chronic Pain for Whites, but Not Blacks

Keywords:
Depressive symptoms, Health Disparities and Pain

Abstract Summary:
Low back pain is the leading cause of disability. In USA, it disproportionately affects racial minorities and individuals of lower socioeconomic status. We found that for Whites higher social status correlate with lower depressive symptoms and pain, but for Blacks higher social status correlate with higher depressive symptoms and pain.

References:

- GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: A systematic analysis for the global burden of disease study 2017. Lancet. 2018;392(10159):1789-1858. doi:10.1016/s0140-6736(18)32279-7
- Meints SM, Wang V, Edwards RR. Sex and race differences in pain sensitization among patients with chronic low back pain. Journal of Pain. 2018. doi:10.1016/j.jpain.2018.07.001
- Meints SM, Miller MM, Hirsh AT. Differences in pain coping between black and white americans: A meta-analysis. The journal of pain : official journal of the American Pain Society. 2016;17(6):642-653. doi:10.1016/j.jpain.2015.12.017
- Campbell P, Hope K, Dunn KM. The pain, depression, disability pathway in those with low back pain: A moderation analysis of health locus of control. Journal of Pain Research. 2017;10:2331-2339. doi:10.2147/JPR.S139445

- Thompson KA, Terry EL, Sibille KT, et al. At the intersection of ethnicity/race and poverty: Knee pain and physical function. Journal of Racial and Ethnic Health Disparities. 2019. doi:10.1007/s40615-019-00615-7
- Hayes AF. Process: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling 1. 2012.

First Primary Presenting Author
Primary Presenting Author
Edwin N. Aroke, PhD, CRNA
University of Alabama at Birmingham
School of Nursing
Assistant Professor
Birmingham, Alabama
USA

Author Summary: Dr. Aroke is a Certified Registered Nurse Anesthetists and an Assistant Professor in the School of Nursing at the University of Alabama at Birmingham. Dr. Aroke's program of research funded by the AANA Foundation and the NIH, and focuses on genomic and epigenomic bases of chronic pain, pain disparities, and response to pain medications. He has multiple publications in peer-reviewed journals and was selected a 2019 Health Disparities Research Institute Scholar by the NIH/NIMHD.

Second Author
Pamela Jackson, BSN, BS, MLT, RN
University of Alabama at Birmingham
School of Nursing
Doctoral Student
Birmingham, Alabama
USA

Author Summary: Pamela Jackson is a PhD in nursing student at the University of Alabama at Birmingham. Jackson's research interests are epigenetic changes associated with negative social experiences and resulting poorer health outcomes. Her ultimate goal is to improve health and resilience in the community through increased understanding of the ways the social environment affects gene expression.

Third Author
Demario S. Overstreet, MS
University of Alabama at Birmingham
Department of Psychology
PhD Student
Birmingham, Alabama
USA

Author Summary: Demario Overstreet is a PhD student in the Behavioral

Neuroscience program at the University of Alabama at Birmingham. Overstreet's research interests include investigating the cognitive processing of pain using quantitative sensory testing, identifying blood and brain-circuitry based predictors of poor chronic low back pain outcomes and investigating interactive race by SES differences in various measures of endogenous pain modulation.

Fourth Author
Terence M. Penn, MA
University of Alabama at Birmingham
Department of Psychology
Doctoral Student
Birmingham, Alabama
USA

Author Summary: Terence Penn is a fourth-year doctoral student in the Medical/Clinical Psychology Doctoral Program at The University of Alabama at Birmingham (UAB), under the mentorship of Dr. Burel Goodin. He is broadly interested in the study of Behavioral Medicine which integrates biological, social, and psychological factors to understand and improve overall health. His current research focuses on examining the roles of race/ethnicity and perceived racial discrimination on chronic pain.

Fifth Author
Tammie Quinn, BS
University of Alabama at Birmingham
Department of Psychology
Lab Manager
Birmingham, Alabama
USA

Author Summary: Over the past 16 years, Ms. Quinn has worked in various research environments at three different universities. She has been involved in numerous research projects in a variety of roles. Her various positions have allowed her to be involved with everything from research project design and data collection, to training and mentoring students both undergraduate and graduate. Her current role at UAB allows her to utilize all of her skills and experience in one forum.

Sixth Author
Andrew M. Sims, BS
University of Alabama at Birmingham
Department of Biostatistics
Graduate Student
Birmingham, Alabama
USA

Author Summary: Andrew Sims a graduate student at the University of Alabama at

Birmingham pursuing a master's degree in biostatistics with a prior B.S. in Applied Mathematics. His role in this project is data cleaning, querying, and organization.

Seventh Author
D. Leann Long, PhD
University of Alabama at Birmingham
Department of Biostatistics
Assistant Professor
Birmingham, Alabama
USA

Author Summary: Dr. Leann Long is an assistant professor of Biostatistics at the University of Alabama at Birmingham. She has a PhD in Biostatistics and over 12 years of experience collaborating on scientific studies.

Eighth Author
Burel R. Goodin, PhD
University of Alabama at Birmingham
Department of Psychology
Associate Professor
Birmingham, Alabama
USA

Author Summary: Dr. Burel Goodin is an Associate Professor of Psychology and Anesthesiology at the University of Alabama at Birmingham. Dr. Goodin is the Director of the Biobehavioral Pain and his research of funded through multiple R01 grants from the NIH.