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Health Disparities in Slipped Capital Femoral Epiphysis (SCFE) Presentation

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Health Disparities in Slipped Capital Femoral Epiphysis (SCFE) Presentation: The Impact of Pediatric Neighborhood Opportunity and Structural Racism

Rithika Ginjupalli, George Thomas MD, An-Lin Cheng PhD, Richard Schwend MD PhD, Caleb Grote MD PhD

Background

- SCFE incidence is 3.94 times higher in black children and 2.53 times higher in Hispanic children
- Association between pediatric obesity and the development of SCFE
- Neighborhood-level SDH indices allow for a multidimensional analysis of various disparities
- COI is a comprehensive measure of a child's education, environment and health, and socioeconomic status
- ICE measurement of a census tract's combined racial segregation and income inequality.

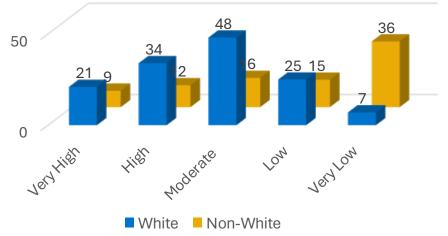
Methods

- Retrospective cross-sectional chart review
- Patients aged 0-18 who presented to our tertiary care center with SCFE
- ICD9 732.2, ICD10 M93.0XX, and CPT codes 27176, 27178
- Home addresses were queried in the US Census Geocoder to identify 2010 census tracts
- Census tracts were used to find the 2015 national overall/quintile COI and 2018 ICE
- Kendall's tau or Pearson correlations were calculated to gauge the relationship between two types of measures
- Group differences were evaluated based on the mean difference and tested by a two-sample t-test.

Results

- 226 total patients
- 142 (62.8%) were male
- 135 (59.7%) were white, 47 (20.8%) black, and 22 (9.7%) non-white Hispanic
- 105 (46.5%) were publicly insured
- Average BMI at presentation was 28.5 (SD 8.97)
- Slip angles in Public/no insurance > Private insurance
- Significant correlations:
 - COI and ICE $(T_b = 0.715, p = < 0.001)$
 - COI and BMI ($T_b = -0.197$, p=<.001)
 - ICE and BMI ($T_b = -0.168, p=.002$)
- BMI had no significant correlation with slip angle in our patient population

Distribution of Whitevs Non-White Patients Across COI quintiles



Discussion

- Neighborhood-level disparities that contribute to pediatric obesity may contribute to pediatric SCFE
- SCFE patients when compared to age and sexmatched controls were at nine times higher risk of adult obesity, three times higher risk of adult hypothyroidism, and two times higher risk of all-cause mortality
 - Low COI pts are then more susceptible to poor outcomes
- SCFE patient's measured neighborhood advantage increased, the neighborhood was more likely to be segregated towards white high-income households ($T_b = 0.715$, p=<0.001)
- higher presenting BMI significantly correlates with increased delays in diagnosis -> worsened Southwick slip angles -> avascular necrosis, chondrolysis, and worsened functional outcomes
- Clinicians managing SCFE patients should adjust post-operative management plans for patients from neighborhoods that are more resource deprived and segregated

Citations: Past JSA, Browne A, Browne NT, et al. ASMBS pediatic metabolic and baniatric surgery guidelines, 2018. Surgery for Obesity and Related Diseases. 2018;14(7):882-901. doi:10.1016/J.SOARD.2018.03.019

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