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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

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.

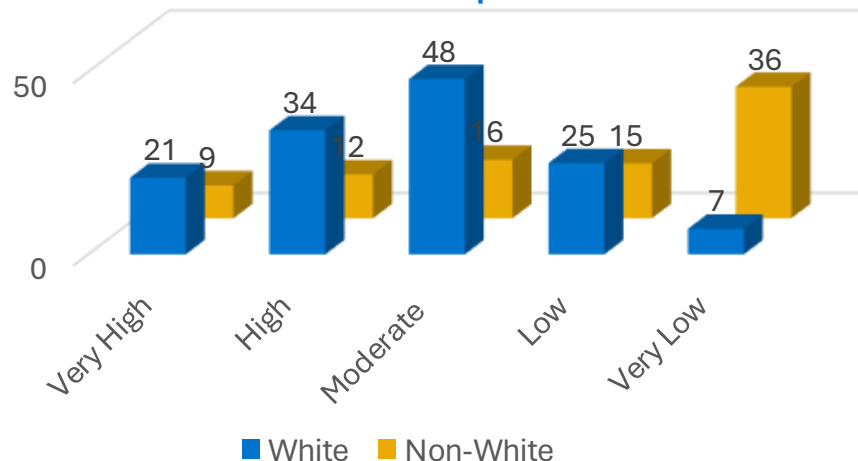
Methods

- 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 White vs 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 sex-matched 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