The impact of neighborhood poverty on BMI trajectory
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Outline

• Background
• Methods
• Results
• Clinical Implications
Neighborhood Poverty and Childhood Obesity

- 21% of children live in households below the Federal Poverty Level
- Literature review
  - Household poverty may impact obesity risk
  - Limited ability to afford healthy food or pay-to-play sports leagues
  - Barriers to accessing healthcare system
  - Limits on caregivers’ ability to support healthy habits
- Living in a high poverty neighborhood may also impact obesity risk
  - Less greenspace
  - Higher crime
  - Fewer healthy food options
  - Trauma and/or chronic stress
  - Poor sleep

Purpose

- To examine how change in neighborhood poverty impacts children’s obesity risk and to discuss implications for clinical practice

Observe BMI over 11 years
Methods: Data Sources

- New York City Fitnessgram 2006/2007-2016/2017
  - Demographics and body measures
- New York City Neighborhood Tabulation Area
  - Home neighborhood
- Census American Community Survey 2015
  - 5 year poverty estimates

Methods: Key Variables

- Demographics
  - Sex, age, race/ethnicity, grade, English language learner status, free/reduced lunch status
  - Height and weight: Measured by trained physical education teacher for calculation of BMI and BMI z-score
- Poverty
  - Percent of individuals below Federal Poverty Level in child’s home neighborhood
  - Categorized into 6 groups based on methods developed for New York City

Methods: Analyses

- Descriptive statistics
- Univariate analyses
  - T-test, Wilcoxon rank sum, chi-square
Methods: Analyses

- Propensity score application
  - Propensity score matching, propensity score weighting
- Univariate analyses
  - T-test, Wilcoxon rank sum, chi-square

- Piecewise linear random coefficient model
  - Total sample
  - By sex
  - By sex and developmental stage
- Sensitivity analyses
  - Multiple imputation

Results: Demographics

- Total sample (n=2,477,771)
- With neighborhood poverty data (n=532,513)
- Moved to a different poverty neighborhood at data midpoint of 2010-2013 (n=37,544)
  - Moved to higher poverty (n=19,174)
  - Moved to lower poverty (n=18,370)
## Results

- BMI controlling for age and sex
  - Effect for youngest children $\beta = -0.03$, $p < 0.01$
- No effect on BMIz
- Sensitivity analysis
  - Consistent with multiple imputation
- Next steps
  - Multi-group two piece latent growth model

## Clinical Implications

- Consider the effects of neighborhood poverty (and other social determinants of health) when working with children to attain a healthy weight
  - Youngest children may be most susceptible to neighborhood effects
Clinical Implications

• For children who live in poverty, consider connecting to resources to overcome barriers
  • Safe and free physical activity
  • Healthy and affordable food stores
  • Low cost recipes

Clinical Implications

• Be careful about stigma
  • Non-judgmental body language and expressions
  • Careful word choice
  • Avoid making families feel singled out
• Consider other barriers related to poverty such as food insecurity
  • Connect with resources as needed

Discussion

• If and how have you observed the impact of poverty (household or neighborhood) in your practice?
• Does your clinic have strategies in place to address poverty?
• Do you observe differing effects for younger children?
Conclusions

- Nurses can play an important role in helping children - including children living in high poverty neighborhoods - to have a healthy body weight.

Thank you

- Questions?
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Resource List

- SNAP: https://www.fns.usda.gov/snap/apply
- WIC: https://www.fns.usda.gov/wic/wic-how-apply
- Children’s Health Insurance Program: http://www.insurekidsnow.gov/
- National Immigration Law Center: https://www.nilc.org/
- State Unemployment Insurance: http://www2.rac.state.tn.us/unemployment/UnempTest.asp