SOCIAL DETERMINANTS OF HEALTH AND RECURRENT CERVICAL DYSPLASIA AMONG WOMEN IN MIDDLE TENNESSEE, 2008-2020

Anjola-Oluwa Ajayi[1], Emmanuel Sackey[1], Emily Delikat[1], Nicole Andersen[1], Sheelah Blankenship[1], Jessica L. Castilho[1]

1. Vanderbilt University Medical Center, Nashville, Tennessee, USA

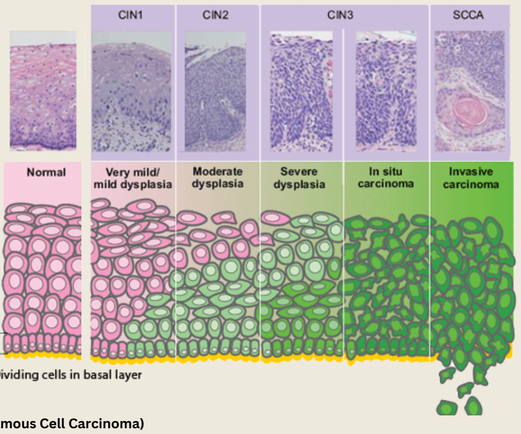
Contact: Anjola-Oluwa Ajayi, MBBS
anjola.ajayi@vumc.org

INTRODUCTION

- Cervical intraepithelial neoplasia (CIN) grades 2 or higher and adenocarcinoma in situ (AIS), collectively denoted as CIN2+, represent the moderate to high-grade precancerous lesions of the cervix before invasive cervical cancer development.
- Many health-related outcomes are impacted by area-level measures of social determinants of health (SDoH), however, less is known about the impact of Social Vulnerability Index (SVI) on cervical dysplasia progression.
- Understanding the impact of SDoH on the progression of cervical dysplasia can help improve screening and treatment services, ultimately reducing the burden of cervical cancer.

OBJECTIVES

- Understand and describe the area-levels measure of social determinants of health – SVI and its sub-themes.
- Describe different levels of pre-malignant lesions of the cervix.
- Describe the importance of geospatial analysis in public health.



(*SCCA =Squamous Cell Carcinoma)

Histological classification of (pre)cancerous lesions of the cervix
Photo credit: University of Liège. https://www.reflexions.uliege.be/cms/c_180168/en/histological-classification-of-pre-cancerous-lesions-of-the-cervix

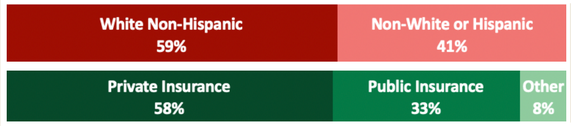
METHODS

- Data Source: TN HPV-IMPACT surveillance data between 2008- 2020.[1]
- The Social Vulnerability Index (SVI) data was accessed from the CDC's Agency for Toxic Substances and Disease Registry (CDC/ASTDR).[2]
- Eligibility criteria - only participants with two or more CIN2+ events were included. Incident events with cervical cancer, adenocarcinoma in situ and events after 2018 were excluded.
- The incident event was defined as CIN2, CIN2/3, or CIN3 and the outcome of cervical dysplasia was defined as any second event > 6 months of a higher grade than the incident event.
- SVI was matched to individual addresses of eligible study participants from the year of incident event.
- The SVI scores were dichotomized into areas of low vulnerability (<90th percentile) vs areas of high vulnerability (>90th percentile).
- Analysis: Descriptive statistics and multivariable logistic regression adjusting for age, year, insurance status, and race/ethnicity.

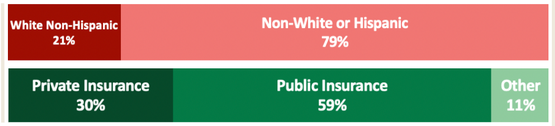
RESULTS

- Of the total population of women with at least 1 CIN2+ event (6,283), **389 participants were eligible.**
- 338 (87%) were in the low SVI group & 51 (13%) were in the high SVI group.
- The **median age** of participants at incident event was **29 years old.**

Low Vulnerability

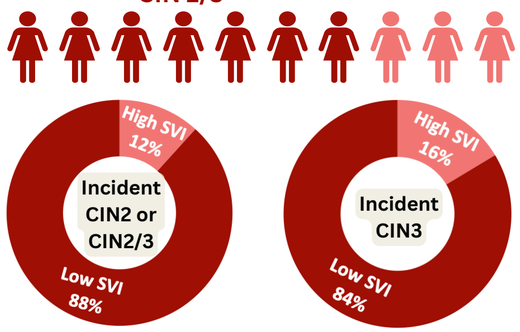


High Vulnerability

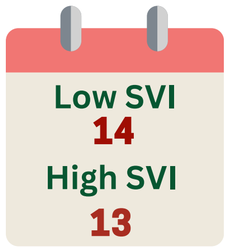


Of incident events

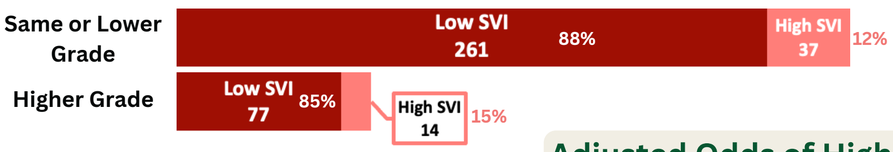
70% were CIN2 or CIN 2/3 — 30% were CIN3



Average Time to Recurrent CIN2+ Event (months)



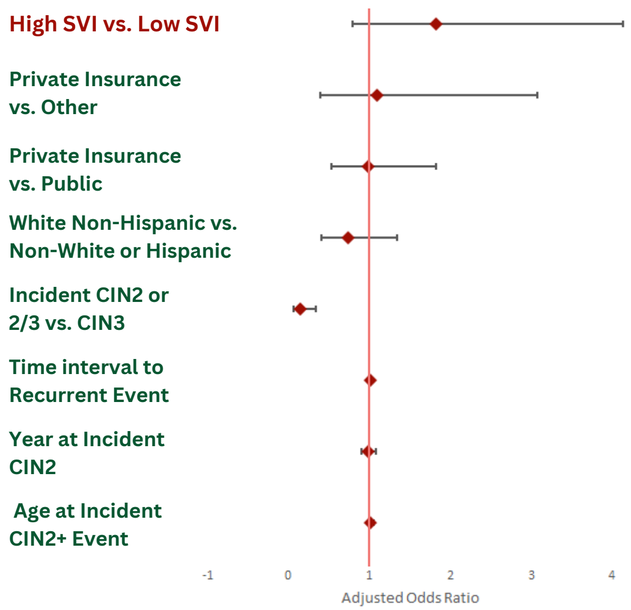
Grade of Recurrent Event by Social Vulnerability



Adjusted Odds of Higher Grade Recurrent CIN2+ Event

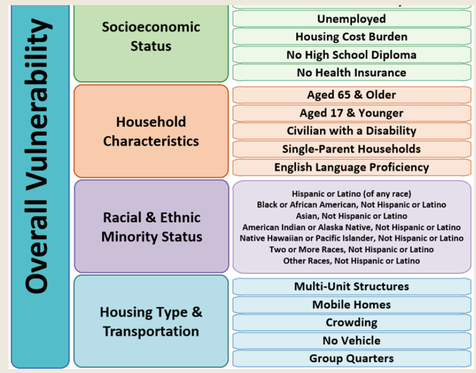
In the unadjusted and adjusted models:

- Higher SVI was associated with a higher likelihood of higher grade CIN2+; however, this was not statistically significant
  - OR: 1.28 [95% CI: 0.66 - 2.50] aOR: 1.83 [95% CI: 0.80 - 4.13])
- Longer interval time between CIN2+ events and lower grade incident CIN2+ diagnosis were statistically significantly associated with a higher grade second event.
  - aOR per month: 1.01 [95% CI: 1.00 - 1.03]
  - aOR: 0.15 [95% CI: 0.06 - 0.34])



SOCIAL VULNERABILITY INDEX (SVI)

- SVI is an area-level measure of deprivation grouped into four themes based on 16 social factors.



- SVI is calculated based on the 16 factors to generate an overall percentile.
- A higher score (>90th percentile and above) indicates high vulnerability and a lower score (<90th percentile) indicates low vulnerabilty.

LIMITATIONS

- Not a longitudinal study - Individuals may be lost to follow up.
- Single county study which may limit generalizability and power to detect a statistically significant difference.

CONCLUSION

- Social Vulnerability Index (SVI) was not statistically associated with recurrent higher grade CIN2+ events among women in Davidson County, Tennessee.
- Further studies with larger sample size is required to evaluate the impact of SDoH on cervical dysplasia outcomes.
- Additional measures of community-level vulnerability may be used to evaluate the the outcome of cervical dysplasia.

ACKNOWLEDGEMENTS

The authors would like to acknowledge and thank Dr. Martin Whiteside (Tennessee Cancer Registry); Dr. Julia Gargano and Dr. Lauri Markowitz (Centers for Disease Control and Prevention National Center for STD Prevention) for their guidance and support of the TN HPV-IMPACT study.

This project was funded through Emerging Infections Cooperative Agreement 5U01C10003 and received a Non-Research determination by Vanderbilt Human Research Protection Program under 45 CFR 164.512.

REFERENCES

1. Hariri S, Unger ER, Powell SE, et al. The HPV vaccine impact monitoring project (HPV-IMPACT): assessing early evidence of vaccination impact on HPV-associated cervical cancer precursor lesions. Cancer Causes Control. 2012;23(2):281-288. doi:10.1007/S10552-011-9877-6
2. CDC/ATSDR Social Vulnerability Index (SVI). Accessed October 11, 2023. https://www.atsdr.cdc.gov/placeandhealth/svi/index.html.