INHALATION-BASED TOXICITY IN INDIGENOUS COMMUNITIES: DEMOGRAPHIC INEQUITIES IN HEALTH OUTCOMES AND AIR POLLUTION EXPOSURE

Jada L. Brooks, PhD, MSPH, RN, FAAN (Lumbee)

Associate Professor, UNC School of Nursing
YOU ARE on Lumbee, Tuscarora, Cheraw LAND.

Art by Autumn Dawn Gomez
(Taos Pueblo / Comanche)
@pimikwusii

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#HonorNativeLand
BRIEF OVERVIEW

• Background:
  • BS in Biology/Chemistry, UNC at Pembroke
  • MSPH in Epidemiology, UNC at Chapel Hill
  • BSN and PhD in Nursing, Duke University
  • Postdoctoral Fellowship in Nursing, UNC at Chapel Hill

• Research Interests:
  • cardiovascular health disparities in American Indians
  • environmental adversities (air pollutants, psychosocial stressors)
  • Inflammation
  • positive psychological well-being
FAMILY ROOTS
AMERICAN INDIAN HEALTH DISPARITIES

CARDIOVASCULAR HEALTH

RESPIRATORY HEALTH
American Indians and Alaska Natives (AI/AN) experience higher rates of chronic diseases than non-Hispanic Whites. Urban Indian Health Institute; data from CDC. CC BY-ND
CARDIOVASCULAR HEALTH DISPARITIES AMONG AMERICAN INDIAN WOMEN

- AIAN women ages 25–49y have disproportionate CVD mortality rates\(^5\)
  - Black women: 46/100 000
  - AIAN women: 40/100 000
  - White women: 19/100 000
  - Latinx women: 11/100 000
  - Asian Pacific Islander: 7/100 000
RESPIRATORY HEALTH DISPARITIES

- Asthma is the most common chronic disease of childhood
- Children from low-income and ethnic minority backgrounds are disproportionately affected
- Asthma prevalence and mortality rates are reportedly higher among AIAN children than White children
  - 14.6% as compared to 9.2%\(^6\)
  - 11.15 higher odds of inpatient mortality from asthma hospitalizations\(^7\)
- In NC, the number of asthma-related hospital discharges in American Indian children are 3.4 times the number in White children (245 vs. 71.8 per 100,000 respectively)\(^8\)
LUMBEER TRIBE OF NC
Hoke, Robeson, and Scotland

NATIVES
Robeson County, NC

39%

NATIVES LIVING IN POVERTY
Robeson County, NC

37%

Map published by the North Carolina Commission of Indian Affairs.
INEQUITIES IN AIR POLLUTION EXPOSURE
WHAT ARE THE SOURCES OF AIR POLLUTION?

Outdoor air pollution affects urban and rural areas and is caused by multiple factors:

- **INDUSTRY & ENERGY SUPPLY**
- **DUST**
- **AGRICULTURAL PRACTICES**
- **HOUSEHOLD ENERGY**
- **TRANSPORT**
- **WASTE MANAGEMENT**

Countries cannot tackle air pollution alone. It is a global challenge we must all combat together.

CLEAN AIR FOR HEALTH  #AirPollution

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Coarse PM can reach the nose and throat.

Fine PM can reach deep into the lungs.

Ultrafine PM can pass into the bloodstream and be transported throughout the body.

Examples of PM health effects:

- Stroke
- Coughing
- Throat irritation
- Difficulty breathing
- Respiratory and cardiovascular disease
- Inflammation
- Premature death
- Aggravated asthma
- Cellular and genetic damage
Air pollution - particulate matter in Robeson County, NC
Average Density of Fine Particulate Matter: County, State and National Trends

Robeson County is getting better for this measure.

Notes:
Data in this trend graph are taken from the Environmental Public Health Tracking Network, and will not match data used in the 2014-2016 Rankings.
EPA MONITORS IN NORTH CAROLINA
HAPPI PROJECT OVERVIEW

• Title: Hazardous Air Pollutants, Positivity, and Inflammation (HAPPI)

• Specific Aims:
  • Examine the associations between PM and cardiovascular-associated inflammatory markers in AI women
  • Examine the associations between psychological states and cardiovascular-associated inflammatory markers in AI women
  • Determine whether positive psychological states buffer (moderate) the association between PM and cardiovascular-associated inflammatory markers in AI women
A Study to Help Manage Asthma in Children (ASTHMA-C)

Specific Aim
- to assess the relationship between family management of child asthma and maternal depressive symptoms

Cross sectional study

Setting
- 2 pediatric clinics located in southeastern North Carolina

Sample
- 60 mothers who self-identified as Lumbee and their children were recruited for the study from a pediatric clinic
INDUSTRIAL AGRICULTURE IN ROBESON COUNTY, NC

PANDEMIC OF INJUSTICE

HTTPS://WWW.YOUTUBE.COM/WATCH?V=HBKJ_NGDG_O&T=2OS
FUNDING SOURCES

- National Institutes of Environmental Health Sciences (NIEHS)
- UNC Center for Environmental Health and Susceptibility
- UNC Institute of Environmental Health Solutions
- National Institute of Nursing Research (NINR)
1-4. American Indians and Alaska Natives (AI/AN) experience higher rates of chronic diseases than non-Hispanic Whites. Urban Indian Health Institute; data from CDC. CC BY-ND


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