Self-Reporting of Health Perceptions among Former Uranium Workers, Their Families and Decendants Living in Rural Settings

Harold W. Smith, PhD
Pamela Schultz, PhD, RN
School of Nursing
New Mexico State University
<table>
<thead>
<tr>
<th>Faculty Names:</th>
<th>Harold Wm. Smith, PhD</th>
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<tr>
<td>Conflicts of Interest:</td>
<td>None</td>
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<tr>
<td>Employer:</td>
<td>New Mexico State University</td>
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<td>School of Nursing</td>
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<td>Sponsorship:</td>
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Goals of this Presentation

To inform about research that points to a direct link between the self-reported health perceptions among elderly individuals subjected to uranium, lead and other hazardous environmental materials over the course of their lifetimes.

To inform how they and other family members cope with chronic illnesses and access medical care in regions of inadequate health care delivery systems.
Objectives of this Presentation

To inform about research that points to an under-researched and significant link between…

Primary individuals affected by long-term exposure to environmental hazards and secondary exposure to extended family members.

How these familial groupings participate and respond to treatment in rural, managed health care systems.
Brief History of Environmental Health Research

- Between 1950 and 1980 many Native Americans, Hispanics, and Whites worked in the uranium mines of Utah, Colorado, Arizona and New Mexico.
- Exposure to uranium, radon gas, lead and other heavy metals has been found to have detrimental effects on health (Brugge & Goble, 2002).
- Exposure to heavy metals through mining operations and the manufacture, transportation, storage, and demolition of hazardous natural and man-made materials and facilities has heightened awareness of adverse health conditions of people living in the areas where social vulnerability is most acute (Cutter, Boruff, & Shirley, 2003).
Relevance of Environmental Health Research

Familial exposure to many of these harmful substances continue to go undetected, understudied, and medically under-diagnosed (Sullivan, 2013).

Greater understanding of family health pedigrees may improve self-reporting of health issues and family-centered management of chronic illnesses within extended family systems, particularly those located in rural locations (Rich, Burke, Heaton, Haga, Pinsky, Short, & Acheson, 2004).
Identifying Environmental Contaminants and their Long-term Impact on Human Health

Exposure to Uranium

Long-term exposure to uranium or uranium by-products and other heavy metal hazardous substances through the soil and well water continues to raise concern about the health of individuals and families living near mines and toxic waste disposal locations in rural settings (Steingraber, 2010; Sullivan, 2014).

Exposure to Lead and other Heavy Metals

Exposure in childhood or early adulthood translates to potential health issues among seniors and elderly when bone reabsorption releases minerals (and toxins) long trapped back into the circulatory system, causing hypertension, renal insufficiency, and cognitive impairment (Rowley & Monestier, 2005; Rosin, 2009; Vig & Hu, 2000)
Purpose of the Study

To collect demographic and medical information from mine workers and their family member(s) who had been exposed to uranium, ‘yellow cake’, radon gas, or lead, and/or are living in proximity to uranium mines or other environmentally hazardous locations, in order to assess the long-term health needs of familial groups living in rural communities and frontier locations in New Mexico.

To understand whether or not there is a significant relationship between self-reported health statuses, individuals’ perceptions of their overall health, cluster ailments among family members, and how these multigenerational familial units cope with chronic illnesses among members.
Scientific Significance of the Study
Why is this important?

• An individual’s perception of their own health has been found to be a predictor of how they access health care, as well as level of proactivity of adherence to health and healing regimens (Beaman, Reyes-Frausto, & Garcia-Pene, 2003).

• The rural elderly are at particular risk of neglect and apathy towards seeking health monitoring and interventions that save lives or improve their quality of life (Cho, Martin, Margrett, MacDonald, & Poon, 2011).

• Comprehensive family-centered health management is a systemic adaptation of patient-centered health care (Institute for Patient and Family Centered Care, 2011)
Research Design/Methodology

Survey Instrument

Demographical Data

Checklist of Health Conditions (Self-report)

Health Perceptions Questionnaire (Ware, 1976)
Demographic Results

N = 65
Males = 25
Females = 40
White = 35 (54%)
Hispanic = 16 (25%)
Native American = 9 (14%)
Other = 7 (11%)
Mean Age = 62.0 ±16
Health Perceptions Questionnaire Subscales

Current health
Prior health
Health outlook
Resistance to illness
Health worry/concern
Sickness orientation
Ethnicity and Sickness Orientation Subscale

N = 65

White = 4.35 ± 1.5
Hispanic = 5.87 ± 2.4
Native American = 4.13 ± 1.1

F = 4.53, p = 0.01

There was no difference in other subscales
Checklist of Health Conditions

Arthritis, Asthma, Tuberculosis, Osteoporosis, Bleeding, Cataract, Circulation. Diabetes, Dizziness, Infection, Deaf, Heart, Kidney, Liver, Thyroid, Memory, Lung, Respiratory, Skin, Reproduction, Migraines, Seizures, Psychiatric problems, Silicosis, Blood, HTN, and Cholesterol
Health Perceptions Subscales in the Miner Cohort (N = 10)

10 participants stated they had worked in the uranium mines for a mean number of years [19.0 ±13 years]

<table>
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<tr>
<th>Subscale</th>
<th>Score</th>
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<tr>
<td>Current Health</td>
<td>28.3 ±10.4</td>
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<tr>
<td>Prior Health</td>
<td>8.4 ±4.4</td>
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<tr>
<td>Health Outlook</td>
<td>12.6 ± 5.2</td>
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<tr>
<td>Resistance</td>
<td>8.8 ± 3.4</td>
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<tr>
<td>Health Worries</td>
<td>16.2 ± 5.0</td>
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<tr>
<td>Sickness Orientation</td>
<td>4.0 ± 1.6</td>
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Multigenerational Family Pedigree Analysis
Providing Valuable Medical Information

Comprehensive familial health histories along an expanded age horizon have been found to provide essential information that may avert, eliminate, or better manage illnesses resulting from primary and secondary, as well as intergenerational exposure to environmentally hazardous materials—some of which are genetically altering substances (Rich, Burke, Heaton, Haga, Pinsky, Short, & Acheson, 2004; Steingraber, 2010; Sullivan, 2014; Rosin, 2009)
PEDIGREE ANALYSIS

Preliminary findings suggest more expanded pedigree analysis inclusive of extended family members will provide additional data that may assist health care providers in helping people living in frontier settings create more responsive and systemically integrated, multigenerational health care support systems for their elderly and members suffering from chronic conditions (Beaman, Reyes-Frausto, & Garcia-Pene, 2003).

Data gathered from initial surveys and one-on-one interviews with members of this population will enable classification of family health pedigrees not assembled in previous studies.
What’s next

This pilot has demonstrated the need for additional subjects representing extended family members.

Pedigree analysis is crucial to understand the extensive complexity of exposure to uranium and heavy metal contaminants.

Increasing the sample size and obtaining genograms/pedigrees will determine the illnesses that form a pattern that may be indicative of secondary exposure in families that have a member who may work in proximity to hazardous materials.
Downstream Benefits of Environmental Research
Improving Health Outcomes for Minority Populations in Rural Settings

• Improving access to health care infrastructure
• Increasing proactivity in managing chronic and age-related illnesses
• Eliminating social determinant related barriers of access to quality care
• Improving the quality of life for individuals living in rural and frontier settings, particularly the elderly.


References (continued)


References (continued)


