Wildfires: Implications for Nursing Theory

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Background

The World Health Organization (WHO) has identified air quality as a significant risk factor for human health, morbidity and mortality. Ninety percent of humans are exposed to air pollutant levels exceeding WHO standards (World Health Organization, 2016). The Lancet Commission on Pollution and Health published a report identifying air pollution as “the largest environmental cause of disease and premature death in the world” (Landrigan et al., 2017). Wildfire smoke is a major contributor to global and regional air pollution. Forest fires in the western United States have been nearly 5 times more frequent annually compared to 50 years ago. Larger areas are burning and fires are lasting longer, extending the smoke season (Balmes, 2018), and are expected to increase in prevalence and severity (Environmental Protection Agency, 2016) with the changing climate.

Wildfire smoke is a mixture of hazardous air pollutants and airborne particulate matter (PM) (Balmes, 2018). There is “robust” epidemiological evidence of short-term exposures to PM2.5 (fine particulate matter) and cardiopulmonary mortality (Atkinson RW, Mills IC, Walton HA & Anderson HR, 2015). Other associations to exposure include increased risk of acute respiratory and cardiovascular outcomes (Landrigan et al., 2017; Atkinson, Mills, Walton & Anderson, 2015). People with respiratory conditions such as asthma, COPD and cardiopulmonary conditions are especially sensitive to health effects from smoke exposure. Systematic reviews have documented increased physician visits, emergency department visits and hospitalizations for asthma exacerbation associated with wildfire smoke exposure (Adetona et al., 2016; Liu, Pereira, Uhl, Bravo & Bell, 2015; Reid et al., 2016). On average the cumulative increase in the rate of people becoming symptomatic in response to wildfire smoke is approximately 28% per 10 ug/m increase in PM2.5 (Landrigan et al., 2017). Among people with asthma who use controller medication to prevent attacks, the rate increases to 33% per 10 ug/m (Kadlec, 2018). This is critical given the poor air quality that residents, especially in the Western United States, are facing annually now from smoke. Nurses are in a key position to assess and intervene in this growing threat to human health because of their direct access to patients and their commitment to social justice Nicholas & Breakey, 2017). In a literature review by George, Bruzzese and Matura (2017), the authors found that the effects of climate change on both the natural and built environments, including wildfires, can have deleterious health consequences.
The researchers pointed to nursing’s role in mitigating climate change’s damage to human health through research, policy change and educating the population regarding all aspects of climate change (George, Bruzzese & Matura, 2017).

Purpose
The purpose of this scoping review (Smith & Noble, 2016) is to broadly explore the ways in which nursing science uses theory to guide research on the health effects of wildfires and minimizing exposure to wildfire smoke.

Method
PubMed and CINAHL databases were searched for articles using several Medical Subject Headings (MeSH) and search terms including “nursing” “wildfires,” “brush fire”, “bush fire”, “forest fire” “smoke” and “theory”. Article titles and abstracts were examined to assess for study purpose. Relevance to nursing was determined by assessing whether the work was published in a nursing journal, published by a nurse author or authors, and/or had implications for nursing research or nursing practice. Data elements were extracted, including: author, year, journal discipline/primary audience, nursing specialty, aim/focus, research design (if applicable), theoretical framework, identification of and considerations for “at risk” populations, location, findings and implications.

Results
Results will include flow diagrams of search strategy and results per database searched, quantitative summaries of type of publication (e.g. continuing education, research study), research design, nursing specialty, theoretical framework, population of focus, location, and findings. Findings will be synthesized qualitatively given the expectation that results of the scoping review will be broad and outcomes heterogeneous. The results will be described in terms of how nursing science applies theory to research and practice, with a specific focus on reducing risk of wildfires and wildfire smoke. Questions of interest include how nursing science conceptualizes the temporal nature of wildfire smoke exposures, anticipates and/ or responds to wildfire smoke events, categorizes “at risk” populations, and draws on other disciplines to contextualize this dynamic and increasing risk. Nursing influence on wildfire smoke education, integration of various theoretical frameworks and research will also be explored.

(Global) Implications
Theoretical implications for nursing science will be described based on the results of the scoping review. Implications will be contextualized with literature from health behavior theory, health communication theory, and other related theories from various disciplines that are frequently used to inform nursing science and practice. Through their research and practice, nurses will continue to see the effects of wildfires and wildfire smoke, including those considered most at risk. It is important to aggregate and disseminate nursing scholarship focused on wildfires to guide future research and clinical practice.

Title:
Wildfires: Implications for Nursing Theory
Keywords:
nursing theory, risk factors and wildfires

References:


Abstract Summary:

There is epidemiologic evidence of negative health consequences related to wildfire exposure. With a changing climate, wildfires will increase in frequency and severity and nurses will be caring for more exposed patients. This scoping review explores the ways nursing science uses theory to guide research on health effects of wildfires.

Content Outline:

Data Source, MeSH/ Search terms
Year published
First Author
Authors who are nurses
Journal
Nursing Journal?
Aim/Research question
Research design,
Theoretical Framework
Vulnerable population defined
Findings
Implications

First Primary Presenting Author

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Author Summary: Tara is a PhD student at Washington State University in Spokane Washington. Her focus has been in environmental issues and wildfire smoke specifically in the maternal child population. Tara is also an adjunct professor at California State University San Marcos and a neonatal intensive care nurse

Second Author
Author Summary: I am an Associate Professor of Nursing and the Assistant Dean of Research at the Washington State University College of Nursing. I have been investigating the impact of poor air quality on health for ten years through a social determinants of health lens.

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Author Summary: Dr. Butterfield’s experience includes: 1) leadership roles on descriptive, analytic epidemiology, and RCT studies addressing environmental health issues, 2) participation in invited roles at NIH, EPA, and IOM, and 3) serving as the Director of the Occupational and Environmental Health Nursing Program at the University of Washington. Dr. Butterfield is the author of “Thinking Upstream,” and related publications addressing the economic, ideologic, and environmental antecedents of public health.