Wildfire Disasters and Nursing

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• Nursing education • Disaster nursing • Disasters • Emergency preparedness
• Wildfires

KEY POINTS

- Nurses must take an active role in preparing personally and professionally for wildfires and other disasters.
- Major nursing organizations support disaster preparedness and education.
- Disaster education should be an integral part of nursing programs at all levels.
- Health effects from wildfires can progress to long-term health issues, both physical and psychological.

WILDFIRE DISASTERS AND NURSING

Wildfires in California are increasing and concomitant health effects, which, although recognized by many investigators, have not been examined in the context of nursing.[1–8] Because most nurses live in the region in which they are employed, wildfires have an impact on nurses personally and professionally. It is essential for nurses to understand the implications for health care related to this disaster; the impact extends beyond first responders and public health nurses to those in nearly all areas of nursing. First, however, nurses must understand the larger context surrounding wildfires: the disaster cycle (mitigation, preparedness, response, and recovery) and nursing's roles in each part of that cycle, the position of major nursing organizations on disasters and nursing, and human and environmental factors that contribute to the increasing frequency and severity of wildfires. Nursing's roles in disasters and wildfires have not been explored in much depth outside of caring for those with traumatic injuries. There is much that nurses can and should do in all phases of disaster; this exploratory article provides an overview of factors contributing to wildfires, health effects, and the roles of nurses in wildfire disasters.

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PRECURSORS TO DISASTER

To truly understand the events leading up to the disastrous wildfires in California, it is important to recognize 4 contributing phenomena: drought, winds, climate change, and spreading urbanization (each with its own unique health effects). In recent years, California has suffered from a historic multiyear drought. Wells and reservoirs have run dry. Lack of planning, extensive development, and other factors have led to so much water use that the land is sinking up to a foot (30 cm) a year due to depletion of the water table.[9] Farmers who grow crops that supply the entire United States have watched their water allotments shrink. Larger cities have implemented strict water rationing; those with private water systems are forced to import water. Entire towns have been closed due to lack of drinking water, disrupting lives, separating families, and impacting health. There are economic disasters as well; home values plummet and businesses go bankrupt. People cannot afford adequate health insurance. Drought causes a cascade of events leading to extended fire "seasons" and catastrophic fires. According to the State of California Drought Web site, the entire state is currently in an "extreme drought" condition that one rainy season cannot rectify.[6,10]

Santa Ana winds (called by other names in different areas: chinooks in the Rocky Mountains and foehns in other regions) are dry, hot winds that blow from east to west over the mountains surrounding Southern California. As air comes over the mountains it dries out and compresses, rushing down mountainsides and heating. Winds range from 25 mph to greater than 60 mph, with gusts even higher.[6–11] These gale-force winds are strong enough to blow over full-grown oak trees, cinder block walls, and fences. The low, single-digit humidity dries vegetation quickly, in particular grasses and other small vegetation, and desiccates soil, leading to increased fuel for fast-moving fires. People with respiratory diseases, in particular asthma, are affected by increased dust particles in the air[12] and radio warnings are issued to keep vulnerable persons indoors.

Climate change, caused by increasing greenhouse gases, is leading to higher temperatures and less rainfall in California. According to the National Resources Defense Council[13] and the California Department of Water Resources,[14] multiple health effects are related to climate change, including those related to lack of water due to drought, heat-related illnesses, infectious disease, and health effects from air pollution and extreme weather, including an increase in wildfires.

Southern California alone has a population of more than 22 million people and includes the major metropolitan areas of Los Angeles and San Diego and densely populated surrounding communities with varied demographics.[15] Areas near mountains and Southern California's 4 national forests are highly desirable places to live. As populations increase, communities are encroaching into wildland areas for either status or affordability. This expanding wildland-urban interface (WUI) leads to increasing damage from wildfires due to wind-driven fires blowing down canyons to areas with limited defensibility and restricted accessibility due to either topography or lack of major roads. Living in WUI areas can place people at risk for dangers from wildfires, either directly from smoke and flames or later from dangers of flooding and mudslides after heavy seasonal rains rush down denuded hillsides (**Figs. 1–4**).[15]

DISASTER IN THE MAKING

It was January 16, 2014, and an unusually warm day in the Los Angeles area with temperatures approximately 82°F (27°C). There were severe drought conditions due to a historic lack of rainfall for 2 years. That day, dry offshore Santa Ana winds were predicted. Residents, particularly in the mountains and foothills, are always on alert