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New Mexican Farmers Climate Struggle

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University of New Mexico

NURS 429 – Concepts in Climate Change and Public Health Preparedness

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New Mexican Farmers Climate Struggle**I**

New Mexico is a unique environment due to its rich cultural heritage as well as its year-around dependence on the precipitation that is accumulated during the winter months. The snowpack in the Sangre de Cristo and Jemez mountain ranges are major indicators for the warmer months that lie ahead, including the amount of water that flows into the major rivers that feed the state's reservoirs. Not only does the amount of snowpack directly correlate with the amount of water that ends up in our reservoirs, it also dictates the level of wildfire danger that occurs during the summer months. During the winter, the New Mexico tourism industry depends on snowfall to draw thousands of people to the many ski resorts scattered across the state. By understanding the importance of winter precipitation and its connection to climate change, New Mexicans can begin to change their behaviors to have less of an impact on the rising temperatures that are predicted to occur over the next decade. Not only are the state's natural resources affected, climate change is also affecting a vital demographic of people, farmers.

New Mexico is home to 15 reservoirs, with many located in the northern part of the state. These bodies of water serve a multitude of purposes including conservation storage, flood control, hydroelectric power production, recreation, and wildlife conservation. Because of the arid climate in New Mexico, these man-made bodies of water are an integral part of life, but fluctuating water levels related to unpredictable snowpack cause an increase in the amount of CO₂ and methane that is released due to the decaying organic sediment that line their banks. If precipitation levels remained steady, there would be less emissions due to more stable water levels. Warmer temperatures are also known to contribute to higher carbon emissions from reservoirs due to a larger number of microbes able to survive within the water (Tadonlk et al.,

2012). Even with increased carbon emissions, the greatest threat to New Mexican reservoirs is drought. Reservoirs depend on the winter's snowpack to send them into the warmer months, and without substantial snowfall, our state's water supply enters the warm months already deficit.

Forest fires have been a major threat to New Mexico for most of recorded history. Fire danger is not only related to the amount of moisture in the air, but also the amount of precipitation that was accumulated during the winter months. Because heavy snowpack works to compact grasses and vegetation, it makes grassy areas less of a fire hazard than areas that receive little or no snowpack and leave the vegetation dry and intact (Nathanson, 2018). Current climate trends predict that fires will continue to occur in increasing number and severity, placing an extreme strain on state resources. Currently, forest thinning and controlled/prescribed burns are the state's only defense against this mounting issue. Precipitation throughout the year also plays a large part in the prevention of these devastating natural disasters.

Those living in northern New Mexico are no strangers to the influx of tourists that migrate to the state during the winter months to enjoy the many ski resorts that scatter its mountain ranges. There are currently 11 resorts operating within the state, all with their own distinct charm. The state's largest ski resort, Taos Ski Valley, located in Taos County sees an average of one billion dollars spent annually within its local economy (Logan, 2016). Without substantial snowfall and freezing temperatures, these numbers could drop substantially in the coming years, meaning resorts would close like many New Mexican ski areas already have. Not only would this result in unemployment for thousands across the state, it would also cause the state to lose millions of dollars in fundamental revenue to the economy. The threat of climate change is a real issue for New Mexico, not only for outdoor recreation, but also for the vital revenue generated by the winter sports industry.

As the effects of deficient snowpack in New Mexico become more visible to the general public, those within the medical community need to shift their focus to the most vulnerable populations. The destruction of natural resources and economic turmoil are a huge downside to the New Mexican climate change, but healthcare workers' priorities need to be on those who are disproportionately affected both physically and mentally by the rising temperatures. Farmers are an integral part of the New Mexican workforce, cultivating food for a growing population. Although their work is vital to the survival of millions, this population is disproportionately affected by mental health issues linked to climate change. Major risk factors for farmers diminished mental health across the world includes drought, climate unpredictability, and age-related problems (Daghagn et al.).

II

Currently, there are over 24,000 farms operating within New Mexican borders, employing more than 5,000 workers as of 2019 (U.S. Bureau of Labor Statistics, 2019). Although this number includes equipment operators and supervisors, most farm workers in New Mexico are immigrants and their employment is "off the books". Large-scale agricultural farms are primarily concentrated to the southeastern part of New Mexico and the major cash crops consist of pecans, onions, and chile peppers (Farm Flavor, 2020). As water supplies to the southern part of the state continue to diminish, farmers are faced with harsh working conditions and unforeseen challenges. Modern New Mexican farms have evolved over time from the large-scale operations they are today. Farms used to be comprised of mainly small subsistence farms across the landscape and grew to the current larger for-profit plantations as seen today. Before the Spanish invasion, the Pueblos that dotted the Rio Grande Valley grew mainly corn, beans, and squash in raised beds that allowed for easy irrigation from snow melt during the spring

(Barrett p. 17). As the Spanish settlers began to invade the land, they brought a more advance irrigation system. This irrigation system allowed for larger fields to be made fertile and began to allocate land for cattle grazing. The climate was still quite arid during this period and the success of the crops were heavily dependent upon seasonal rainfall and snowmelt (Elinore, 2012).

In modern times, the cash crops that are grown in New Mexico primarily focus on long term profit. Many farmers have turned to growing pecan and walnut trees for guaranteed profit each season. While there is much value in the nut industry, these crops require extensive irrigation and are extremely sensitive to drought. With high up-front costs, pecan farmers take an extreme risk when deciding to cultivate this crop and the average nut tree takes at least ten years to reach maturity. In years of drought, farmers must incur even higher costs to supply the trees with water as pecan trees often experience issues from water stress for multiple years after a drought (Hwang & Bin, 2019).

As rising temperatures continue to effect crop output, there is also a lesser seen impact: the mental health issues placed on the farmworkers and their families as they navigate uncertain work conditions and frequent layoffs. It is said that one in four people suffer from mental health issues globally, and New Mexican farmers are no exception. Considering that approximately one-third of individuals that contribute to the global economy through their employment do so through the agricultural industry, poor mental health could have a considerably negative impact on economic productivity (Hagen et al.). Luckily, trends are forming to provide farmers with much needed resources to work towards proper mental health. An example of this is the Farmers First Act of 2018 that provides resources to farmers which include stress reduction and suicide prevention (Farm Industry News, 2019).

Farmers are constantly subjected to outdoor conditions, making them more susceptible to health issues related to climate change. Stress is one of the most common mental health issues that farmers face. Chronic stress can lead to more systemic issues like headaches, issues with sleep, memory loss, and anxiety. 75% of farmers in a study published by International Journal of Environmental Research and Public Health reported unfavorable climate conditions and the unpredictability of the weather as their key stress in North America (Daghagn et al.). With climate change expected to increase over the course of the next decade, we can only expect that stressors continue to increase.

III

Addressing mental health is never an easy task and can be even more difficult when those who may suffer from these issues are isolated in rural communities or surrounded by those who continue to perpetuate the stigma associated with mental health treatment. As climate change continues, being able to prepare for an influx of issues that are predicted to arise will place a heavy burden on New Mexican farmers and their families. To combat these issues, mitigation is the next step in the process. Health care professionals can work alongside rural farmers to normalize any mental health issues that farmers are experiencing and work to reduce any harmful effects that may arise as a result of untreated mental illness. In addition to preparedness and mitigation, being able to appropriately respond to untreated mental health issues is an integral part of treating an underserved and vulnerable population.

In 1985, musicians Willie Nelson, Neil Young, and John Mellencamp came together for a benefit concert titled “Farm Aid”. The mission of Farm Aid was to keep family farms in the hands of the people who have worked the land for generations. Farm Aid also began to play a positive role in addressing the chronic stress and mental health care issues that are prevalent in

America's farming communities. To date, Farm Aid has raised 57 million dollars towards farmers across the United States as well as educating consumers about the importance of buying local, from family farms. Although the work of these musicians has been significant in raising awareness for the farmers' plight, it's also important for state and local government to support farmers' as they continue to suffer from climate related health issues. With New Mexico being the 30th most productive farming state (2017 Census of Agriculture) and also considering it has the fourth highest suicide rate in the United States, it is important for health care professionals to recognize the early signs of distress such as personal neglect, greater sensitivity, psychological changes, and suicidal thoughts and be able to give support to those in need.

Currently, there are several hotlines that rural community farmers can utilize in the event of a mental health emergency – Farm Aid Hotline, the National Suicide Prevention Lifeline, and 2-1-1 (connects callers with local resources). Because mental health can affect someone in the same manner as chronic pain, the normal stress of everyday life can become too great for a farmer to handle on their own. In addition to natural disasters related to climate change, farmers are also facing falling commodity prices and an increased level of debt as a result. Any combination of these things can cause turmoil for someone already pushed to the edge. The bottom line is that the male suicide rate for a farmer is 43.2 per 100,000, with the rate for all other occupations being 27.4 per 100,000 (Rural Health Information Hub, 2016).

Because of the alarmingly high suicide rate of farmers and ranchers, one of the biggest issues that farmers in New Mexico face is the lack of health care services within a reasonable distance from their homes. Lack of healthcare is an issue that effects not only farmers but all populations that live in underserved regions. To combat the distance, telehealth is one alternative to reach farmers in rural areas that need to reach out when their mental health becomes poor.

Unfortunately, according to the 2017 Census of Agriculture, only 60% of New Mexican farms have access to internet. This statistic lags far behind the national average of 75%, and the New Mexican farmers' access to internet is only up 4% since the 2012 Census of Agriculture.

The average age of a New Mexican farmer is 58, and it is important to reach out to them in ways that are age appropriate (Census of Agriculture, 2019). Community outreach programs are a great way to interact with farmers from all walks of life or ages and talk about how drought and climate change has affected them. Support groups are also a way to bring isolated farmers together to help them realize that the issues they face are also being experienced by others. Although there are many federal grants that provide monetary assistance to farmers that are affected by climate related disasters such as drought or flooding, there is not nearly enough support for farmers when it comes to talking about mental health and aging.

IV

As we explore ways to reach out to New Mexican farmers, offering mental health services is only one way to address the underlying issues that are the cause of their depression, grief, or anxiety. Educating communities about the causes of climate change is a small step to making a change in communities daily routines, with the goal of lowering their own carbon footprints. It takes time to accept the connection between daily habits and the current rising temperature trends, but it is possible to teach New Mexicans the impact of climate change. Teaching New Mexicans about the importance of energy efficiency in their homes, avoidance of food wastes – including eating less red meat and educating the community about the ways to travel smarter, are simple ways that New Mexicans can begin to fight climate change.

Homes in New Mexico have always been energy efficient. Classic adobe homes have been using the same design techniques for hundreds of years, providing natural insulation that allows heat to be absorbed through its walls in the winter months and works to keep the cool night air inside during the summer. Adobe building techniques have changed very little over the past one hundred years, but there is always room for improvement to make a home more energy efficient. Incorporating solar panels allows homeowners to harness a bountiful and natural resource – the sun. Once the initial installation costs have been covered, solar panels can help to ease the dependence on fossil fuels or coal products. There are incentives from both the state and federal government to install solar panels in homes and businesses, lowering the costs up to 40%. Other ways New Mexicans can lower their carbon emissions at home, is making sure to turn off lights when not in use, growing their own foods in a small garden, and making sure to install energy efficient bulbs in place of older florescent lights.

Countless campaigns have worked to educate the public about the high carbon impact of red meat. Americans are aware that skipping meat one day a week can help lower their families' carbon footprint by almost 2,000 pounds a year (Zero Waste Scotland, 2019). Even with public education campaigns, there is little known about the implications of tossing food waste into landfills. Zero-Waste Scotland published an article last year that works to increase public awareness of binning food waste. The article states that binning food waste is actually more harmful to the environment than tossing out plastics (Zero Waste Scotland, 2019). Decaying food wastes releases three times more methane into the environment than plastics, a statistic that will certainly alarm many. Methane is considered to be much more detrimental to our environment than carbon dioxide and is 30 times more potent as a heat-trapping gas (Science Daily, 2014). Not only does food waste put more methane into the environment, it also

unnecessarily creates carbon emissions used to transport and process these foods. By educating the public about ways to cut down on food wastes, New Mexico can begin to lower its carbon footprint and work to keep climate change under control.

As it stands today, the transportation industry has surpassed the power producing industry as the biggest producer of carbon emissions, and since the 1990s air travel has doubled its emissions (Monk & Buckley-Salmon). Experts have predicted that the air travel industry will continue to grow and will account for 30% of the worlds' carbon emissions by 2050 (Monk & Buckley-Salmon). New Mexicans can work to reduce this number by only utilizing air travel when necessary. There are on average 28 flights that travel from Albuquerque to Denver daily, a drive that takes roughly six hours (flightpedia.org). Although vehicle travel does account for a portion of carbon emissions in the state, it is far less than that emitted from air travel. Providing the public with incentives to purchase electric vehicles or using public transportation is a way the state government can work to encourage the public to lower their carbon footprint and combat emissions from the travel industry.

Without effort from the general public, climate change will continue to affect New Mexico's most vulnerable populations, and progressively worsen until each of us are affected both mentally and physically. Using indicators such as seasonal snowpack, shrinking reservoir levels, and declining tourism income, we can clearly see that climate change is affecting the state more deeply with each passing year. By providing continuous support to New Mexico's vulnerable populations affected by climate change, we can build up the public health system to be better equipped to provide vital services to all New Mexicans struggling with the mental health issues, while ending the stigma of asking for help when it's needed. Although physical health problems that arise from heat are important to note, it is imperative to shed light on the

mental health issues that the New Mexican population may also be suffering from due to climate change. By raising awareness and reaching out to this population, the stigma about mental health can be lifted and these issues can be normalized, allowing for this population to begin to reach out and seek help.

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