



A SUMMARY OF RESEARCH ON FRACKING AND MENTAL HEALTH

Sangaramoorthy, T., Jamison, A. M., Boyle, M. D., Payne-Sturges, D. C., Sapkota, A., Milton, D. K., & Wilson, S. M. (2016). **Place-based perceptions of the impacts of fracking along the Marcellus Shale.** *Social Science & Medicine*, 151, 27–37. doi: 10.1016/j.socscimed.2016.01.002

This study examined community perspectives and experiences with fracking in Doddridge County, West Virginia. In February 2013, the authors held two focus groups with the residents in this heavily fracked area in order to identify emergent themes related to the direct and indirect effects of fracking. The findings indicated that fracking contributes to **a disruption in residents' sense of place and social identity, generating widespread social stress.** Residents acknowledged the potential economic benefits from fracking, however, sudden transformations in meanings of place and social identity influenced residents' perceptions of environmental and health impacts. Residents also expressed concern about environmental changes brought about by fracking such as increased traffic, land erosion and mudslides, wastewater, chemical runoff, and changes in air and water quality. Lastly, almost all participants reported that they suffered from health impacts such as fear, anxiety, and stress brought about by the uncertainty related to fracking.

Resick L.K., Knestrack J.M., Counts M.M., & Pizzuto L.K. (2013). **The meaning of health among mid-Appalachian women within the context of the environment.** *Journal of Environmental Studies and Sciences*, 3(3), 290-296. doi: 10.1007/s13412-013-0119-y

Authors of this 2103 qualitative study interviewed 14 women living in Southwestern Pennsylvania counties where fracking was most prevalent. Interviewers asked participants open-ended questions about their perceptions of health and the environment. After analyzing the data, the overarching theme defining the meaning of health among the participants was a **sense of powerlessness over changes related to the natural gas drilling industry in their community.** This feeling of powerlessness impacted the women's perception of their health and impacted their immediate living space.

Maguire, K., & Winters, J. V. (2017). **Energy Boom and Gloom? Local Effects of Oil and Natural Gas Drilling on Subjective Well-Being.** *Growth and Change*, 48(4), 590–610. doi: 10.1111/grow.12204

This paper examined the effects of conventional and horizontal oil and natural gas drilling in Texas on subjective assessments of life-satisfaction and bad mental health days for nearby residents. The results

suggested that conventional drilling had no statistically significant effect on either subjective life-satisfaction or the number of bad mental health days. However, horizontal drilling statistically significantly **reduced life satisfaction and increased bad mental health days.** Significant adverse effects on life satisfaction are experienced exclusively by women, but adverse effects on bad mental health days are experienced by both sexes with potentially larger effects for men.

Hirsch, J.K., Smalley, K., Selby-Nelson, E.M., Hamel-Lambert, J.M., Rosmann, M.R., Barnes, T.A., Abrahamson, D.J., Meit, S.S., GreyWolf, I., Beckmann, S., & Lafromboise, T. (2017). **Psychosocial impact of fracking: A review of the literature on the mental health consequences of hydraulic fracturing.** *International Journal of Mental Health and Addiction*, 16, 1-15. doi: 10.1007/s11469-017-9792-5

This literature review assessed 23 studies published between 2012 and 2017 to summarize the scientific literature on the mental health consequences from hydraulic fracturing. Researchers concluded that although people living in fracking areas may experience some minimal initial benefits such as land use lease income, they may also experience worry, anxiety, and depression about lifestyle, health, safety, and financial security, as well as exposure to neurotoxins and changes to the physical landscape. Psychosocial impacts were found at both the community and individual level. Community level changes included a **decrease in the quality of life, sociopolitical stress, and collective trauma** resulting from the “boom/bust” cycle of industries impinging on community life. Individual level impacts included an **increase in stress, anxiety, feelings of powerlessness, fatigue, and sleep disturbances.**

Fisher, M.P., Mayer, A., Vollet, K., Hill, E.L., & Haynes, E.N. (2018). **Psychosocial implications of unconventional natural gas development: Quality of Life in Ohio's Guernsey and Noble Counties.** *Journal of Environmental Psychology*, 55, 90-98. doi: 10.1016/j.jenvp.2017.12.008

This paper assessed how residents of two adjacent counties undergoing unconventional natural gas development (UNGD) (Guernsey and Noble Counties, Ohio) are impacted by these activities. The authors used a quality of life (QoL) lens to assess individuals' perceptions of their position in life in the context of their society and culture. The two primary research questions were: How do residents perceive their QoL amid UNGD, and what factors do residents perceive to be most impactful on their QoL? QoL **impacts were reported in five core categories, specifically psychological**

stress, social stress, environment, physical health, and traffic. Psychological stress was a prominent theme, as residents living near UNGD found themselves anxious about the uncertainties of fracking; frustrated by interactions with oil and gas industry officials; stressed about noise or light pollution; and, in some instances, facing the possibility of moving from the region.

Casey, J. A., Wilcox, H. C., Hirsch, A. G., Pollak, J., & Schwartz, B. S. (2018). **Associations of unconventional natural gas development with depression symptoms and disordered sleep in Pennsylvania.** *Scientific Reports*, 8(1). doi: 10.1038/s41598-018-29747-2

This study evaluated the association of unconventional natural gas development (UNGD) with depression symptoms and disordered sleep diagnoses. Participants received a retrospective metric for UNGD at their residence (very low, low, medium, and high) that incorporated dates and durations of well development, distance from patient homes to wells, and well characteristics. To evaluate depression symptoms and sleep disorders, authors used the Patient Health Questionnaire-8 and electronic health record data among Geisinger adult primary care patients in Pennsylvania, analyzing 4,762 individuals. Associations were observed between living closer to more and bigger wells and depression symptoms. High and low UNGD (vs. very low) were associated with depression symptoms (vs. none) **Overall findings suggest that UNGD may be associated with adverse mental health in Pennsylvania.**

Casey, J. A., Goldman-Mellor, S., & Catalano, R. (2018). **Association between Oklahoma earthquakes and anxiety-related Google search episodes.** *Environmental Epidemiology*, 2(2). doi: 10.1097/ee9.0000000000000016

This 2018 study aimed to examine associations between Oklahoma earthquakes caused by fracking and statewide anxiety measured by Google queries. Using the Google Health application programming interface, the proportion of weekly Oklahoma-based health-related search episodes for anxiety was compiled. A time-series analysis from January 2010 to May 2017 evaluated monthly counts of earthquakes \geq magnitude 4 (a level felt by most people) in relation to anxiety. In months with 2 or more \geq magnitude 4 earthquakes, **the proportion of Google search episodes focused on anxiety increased by 5.8%**. These findings suggest that earthquakes caused by fracking elicited a psychosocial response, implicating a widespread public health effect from fracking.

Perry, S.L. (2012). **Development, land use, and collective trauma: The Marcellus shale gas boom in rural Pennsylvania.** *Culture, Agriculture, Food and Environment*, 34, 81-92. doi: 10.1111/j.2153-9561.2012.01066.x

This article describes the impacts of the rapid Marcellus shale gas developments in Bradford County, Pennsylvania. The author illustrates the ways that rapid social and economic change processes are impacting daily lives and community dynamics. After conducting interviews and focus groups with longtime residents, **psychological stress** was reported on community and individual levels. Residents reported **increased feelings of anxiety and helplessness, as well as increased tension among community members.**
