Researchers find opioid prescriptions linked to obesity

April 2 2020, by Michelle Samuels

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Two new studies from the Boston University School of Public Health (BUSPH) shed light on the relationship between obesity and the use of prescription opioids in the United States.

One of the studies, published in the *American Journal of Preventive Medicine*, finds that patients with higher body mass indices (BMIs) were up to 158% more likely to use prescription opioids long-term, and that 27% of long-term opioid prescriptions from 2000 to 2015 were attributable to higher BMIs.

The other study, published in *JAMA Open Network*, examines the pain conditions underlying this increased likelihood of opioid prescriptions for people with higher BMIs. This study finds that osteoarthritis and other joint disorders were the two reasons for an opioid prescription most strongly associated with obesity. Together, osteoarthritis, other joint disorders, and back disorders accounted for more than half of the difference in opioid prescriptions by obesity.

"Research on the opioid crisis to date has focused heavily on the supply-side factors that increased access to opioids," says Dr. Andrew Stokes, assistant professor of global health at BUSPH, who led both studies. "Our studies offer new evidence for policymakers to consider how addressing the roots of this crisis will require attention to the underlying sources of demand for pain relief, including obesity through its association with pain."

The *JAMA Open Network* study is the first in a collaboration between BUSPH and athenahealth, supported by the Robert Wood Johnson Foundation, with Stokes and colleagues drawing from the multipayer electronic health record data in athenahealth's network of over 60 million patients receiving care from more than 120,000 health professionals across the United States.

For this study, the researchers used anonymized data from 565,930 patients who were between 34 and 64 years old in 2016 and had a BMI measurement recorded during that year. They then identified any opioid prescriptions for these patients in the year before or after their BMI

measurement, as well as any related pain diagnoses.

After adjusting for age, sex, race/ethnicity, urbanicity, and other factors, the researchers found that patients with BMIs considered "overweight" or "obese" were more likely to be prescribed opioids than patients with BMIs in the "normal" range. The associations were particularly strong for opioid prescriptions related to joint and back pain, suggesting that these conditions play a significant role in increasing demand for pain management among patients with obesity.

In their other study, Stokes and colleagues used data from the Medical Expenditure Panel Survey to report on 89,629 adults between the ages of 30 and 84 years old who had never been prescribed opioids when first surveyed. They then analyzed the incidence of long-term (approximately 10 months or longer) use of prescription opioids. The team found that patients with higher BMIs were more likely to use opioids long-term, ranging from a 24% increased likelihood for those with BMIs considered "overweight" to a 158% increased likelihood for those with BMIs in the "obese III" range. Joint pain, back pain, injury, and muscle/nerve pain were commonly identified as reasons for opioid prescriptions.

"Policy efforts are urgently needed to regulate the obesogenic environment in this country," says Dielle Lundberg, a research fellow in the Department of Global Health at BUSPH and co-author of both studies. "When people are denied access to affordable, healthy food and to the sort of built environments that promote physical activity and health across the life course, obesity is more likely to occur. The results of both studies suggest that through obesity, such environments can also increase pain and create future demand for prescription opioids."

"These data also highlight the urgent need for better pain management approaches and options for millions of Americans," says Dr. Tuhina Neogi, professor of epidemiology at BUSPH, professor of rheumatology

at the Boston University School of Medicine, chief of rheumatology at Boston Medical Center, and senior author of the *JAMA Open Networ*k study. "The lack of sufficient medication options, woeful underutilization of physical therapy (which is well-supported by high-quality evidence for these conditions), and challenges in supporting weight loss efforts have led to prescription of opioids in management of painful musculoskeletal conditions where little evidence exists to support their use."

More information: Andrew Stokes et al, Obesity and Incident Prescription Opioid Use in the U.S., 2000–2015, *American Journal of Preventive Medicine* (2020). DOI: 10.1016/j.amepre.2019.12.018

Provided by Boston University School of Medicine