



Obesity & Chronic Pain

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Obesity and pain present serious public health concerns in our society. Obesity is a condition of having abnormal or excessive fat accumulation in adipose tissue. Obesity is defined by using weight and height to calculate BODY MASS INDEX (BMI) (Table 1).

Obesity is a growing problem in America.

- In **2007-2008, 33.7%** of Americans were **obese**.
- In **2015-2016, 39.6%** of Americans were **obese**.
- In **2007-2008, 5.7%** of Americans were **morbidly obese**.
- In **2015-2016, 7.7%** of Americans were **morbidly obese**.

In fact, the World Health Organization (WHO) estimates more than **14%** of adults **worldwide** are obese. Obesity presents a significant risk factor for a range of medical problems, including cardiovascular diseases, cancer, diabetes, and arthritis.

Chronic pain can also be associated with obesity, and obesity usually results in greater functional and

psychological complications of chronic pain. Sensitivity to pain could be partly due to the pro-inflammatory state of the obese patient. It has been shown that inflammatory markers such as IL-6 and CRP are significantly related to percent of body fat.

Table 1. BMI Weight Status Categories

BMI (kg/m ²)	Weight Status
<18.5	Underweight
18.5-24.9	Normal
25-29.9	Overweight
30-40	Obese
>40	Morbidly Obese

BMI, body mass index

Musculoskeletal Pain/Osteoarthritis

While 20% in the general population has been diagnosed with arthritis, up to 33% of Americans who are obese have been diagnosed. Arthritis involves the wearing down of the joints due to the stress put on them. Genetics and age, among other factors, play a role, but the extra weight places even more stress on the joint. Every pound of excess weight adds 4 pounds of pressure to the knees. So, if you're 50 pounds overweight, that's 200 pounds of extra pressure on your knees.

Neuropathic Pain

Neuropathic pain or nerve pain is defined as pain arising from disease affecting the somatosensory system. Diabetes is a common cause of neuropathic pain and is a disease intimately tied to obesity. Up to half of all patients with chronic diabetes have polyneuropathy, which is a major cause of morbidity and mortality in the obese population. The most common cause of injury in diabetic patients with

polyneuropathy is mechanical stress that goes unnoticed because of loss of peripheral sensation, most commonly in the feet. Patients will walk on the injured tissue, further damaging the internal structure.

Fibromyalgia/Headache

Fibromyalgia is defined as pain associated with tender points at multiple levels, joint stiffness, and symptoms other than those musculoskeletal in origin including mood disorders, fatigue, and sleep disturbances. Obesity has been found to affect the quality and amount of sleep, and pain sensitivity in fibromyalgia patients.

Headaches are a common problem in the general population; however, they are more common and incapacitating in the obese. The neuropeptide calcitonin gene-related peptide (CGRP) are found to be elevated during migraine attacks. CGRP has also been found to be at higher levels in obese women, providing a possible link between increased BMI and increased migraines.



Summary

Obesity and pain have a complex interwoven relation, and the obese patient population continues to be a difficult patient for clinicians in all fields. Obesity is recognized as being a pro-inflammatory state, and the subsequent inflammation causing pain to the individual. The best long-term strategy for pain management in the obese is weight loss. Exercise and dietary weight loss are more effective in combination than when either is done alone. As a last resort, bariatric surgery may be beneficial as a weight loss strategy in the morbidly obese.

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