

**MICHAEL  
TURNER:**

Well, vitamin D is an exciting nutrient that we're learning more about every day. It has important benefits for the musculoskeletal system. We know that it's very important to create strong muscles and also strong bones. And we know that inadequate levels, besides creating weak bones and weak muscles, also can produce pain-- musculoskeletal-based pain. In addition, science is showing every day that there are other benefits of vitamin D besides the musculoskeletal system. We're finding benefits in terms of anti-cancer properties, and also, some exciting benefits about being helpful for the immune system.

Our research focused on patients who suffer from chronic pain. It was done at the Mayo Pain Rehabilitation program, which works with patients who have suffered chronic pain from a variety of causes. In our case, patients had suffered pain for an average of about 11 years.

And what we did is we took 267 consecutive patients who were admitted to our program and measured several things-- first of all, their vitamin D levels. And then, through a series of questionnaires, we asked them specifically three different categories. We asked how much pain medication they were requiring, how they felt overall about their health status, and how they felt about their physical function and physical strength.

And we then sorted those patients. We looked at who had adequate levels of vitamin D and who had inadequate levels. And then we compared those two groups. How did they do on the amount of pain medication that they required? How did they do on their sense of overall physical function? And how did they do on their overall sense of health?

The study really had two exciting findings. One was a very strong association between vitamin D deficiency and the amount of narcotic-type pain medication that was required. And by narcotic pain medication, we refer to morphine, fentanyl, and other similar such strong medications.

What we found is that those patients who were on narcotics and who are vitamin D deficient, were taking much more pain medication than those who are on narcotics but had adequate levels of vitamin D. In fact, those patients who lacked sufficient vitamin D were taking on average about twice as much narcotic-type pain medication. Interestingly, these patients also reported a worse sense of overall health and a worse sense of overall physical strength and function.

The second finding that we had was that there was a strong association between being overweight and having inadequate levels of vitamin D. We know that being overweight is a risk factor for vitamin D deficiency, because vitamin D is stored in fat cells. The more fat cells that are present, the more the vitamin D is taken out of circulation and stored, rather than being available for use by the body.

What this means for patients is really the following. If you are a patient who has chronic pain that is severe enough to require morphine, fentanyl, or other such narcotic pain medication, you should strongly consider getting your vitamin D level checked, especially if you're overweight. Checking is very straightforward. It's a matter of a simple and inexpensive blood test. Also, replacing the levels is similarly straightforward. Vitamin D can be purchased over the counter at any food store in the vitamin section.

Not only may this help your chronic pain and improve your overall sense of well-being and physical functioning, but vitamin D also has other side benefits not directly addressed by my research, but which have been coming out recently in the scientific literature. This would include such things as possible anti-cancer benefits and possible benefits relating to strengthening the immune system.

What this means for physicians, I would say, is if you have a patient who has chronic, diffuse, difficult-to-diagnose pain, especially pain that you think is musculoskeletal, you should strongly consider checking the vitamin D level on that patient, especially if they have risk factors, such as being overweight, or being housebound, such as nursing home patients, or disabled patients, or patients who are just indoors for an excessive amount of time. Checking the level is very straightforward and inexpensive. It's a fairly simple blood test. And likewise, replacing vitamin D is inexpensive and straightforward. So it's a great situation for doctors and patients.