



MIGRAINE WORLD SUMMIT

INTERVIEWS WITH WORLD LEADING EXPERTS



# TRANSCRIPT

**HOW WEIGHT AFFECTS MIGRAINE DISEASE**

**DALE BOND, Ph.D.**



**Introduction (00:06):** There's been some, again, some epidemiologic research that suggests that obesity might increase risk for progression from episodic to chronic migraine. And so, one of the most common theories is that obesity is a low-grade systemic inflammatory state, and that might exacerbate the neurovascular response of migraine. And so that might be one mechanism by which obesity contributes to increased frequency, as well as increased risk of having chronic migraine.

**Paula K. Dumas (00:35):** Controlling migraine is tough enough, but managing migraine and weight loss at the same time is really difficult. If you're anything like me, I don't need a scale or a mirror to tell me that my weight is going up or down. Yet new research indicates that an unhealthy weight may elevate our migraine risk and make it difficult to break free from chronic migraine. Dr. Dale Bond is one of the preeminent experts on migraine and weight. He collaborates with headache researchers to discover new insights that may help people with migraine get control through weight loss, exercise, and even surgical approaches. Dr. Bond, welcome to the Migraine World Summit.

**Dr. Bond (01:17):** Hi, thank you for having me.

**Paula K. Dumas (01:19):** Well, let's start by saying, this is a really sensitive topic. One woman in our community, Kathy, warned, and she said: "Too many of us feel shamed and blamed for excessive weight." And I'm right there with Kathy. I just started a weight loss program, and it is so *hard*. So, we know this is really difficult for people, and we want to be sensitive to that, but we're going to treat it from a health standpoint in this dialogue. So, Dr. Bond, can you help us understand the causes, risks, and practical steps that we can take?

**Dr. Bond (01:52):** Yes, definitely.

**Paula K. Dumas (01:53):** Terrific. So, is there a definitive causative relationship between weight and migraine?

**Dr. Bond (02:00):** I don't think that we're at the causal stage right now, but we ... have some pretty good, strong correlational evidence. And what the research seems to show is that obesity both increases risk for having migraine, and obesity also might be an exacerbating factor. So, in people with existing migraine who also have obesity, [it] is that they might be at greater risk for having attacks that are more frequent and severe.

**Paula K. Dumas (02:30):** We certainly see both of those things coexisting, but I also see a pattern where a lot of people reach middle age, and both weight and migraine are increasing at the same time. So, as a researcher, are you looking at the relationship between weight and migraine at different stages of life?

**Dr. Bond (02:51):** We have looked at different stages of life, and we also see this relationship in children. We tend to see the association as not as strong in older individuals, however; and the association seems to be strongest in women who are between the ages of 18 and 50, or reproductive age.

**Paula K. Dumas (03:13):** So, one woman in our community, Victoria, asked: "Can significant weight gain trigger the onset of migraine?"



**Dr. Bond (03:20):** That's a fascinating question, and it hasn't really been studied directly yet. There have been some studies that have looked at the opposite question: That is, whether migraine increases risk of greater weight regain. And we've seen that in two longitudinal studies. However, based upon our current evidence, I think it would make intuitive sense to think that greater weight gain could actually contribute to migraine, and particularly if that weight gain results in obesity. However, if we look at the opposite end of the weight spectrum, underweight is also associated with increased risk for having migraine. But if someone who is underweight was to have a significant weight gain, and that actually resulted in a healthy weight, we might actually see reduced risk of migraine.

**Paula K. Dumas (04:10):** So is the risk of migraine ... any different for people who are overweight or underweight?

**Dr. Bond (04:17):** So, the risk in terms of weight status seems to be greater for individuals who have obesity versus those who are underweight. So, when we look at the magnitude of risk, it tends to be very modest in terms of being underweight, where it's a more moderate risk when someone has obesity.

**Paula K. Dumas (04:39):** And how does this play into the progression from episodic to chronic migraine? How does it affect the migraine frequency or intensity?

**Dr. Bond (04:52):** So, there's been some, again, some epidemiologic research that suggests that obesity might increase risk for progression from episodic to chronic migraine. And so, one of the most common theories is that obesity is a low-grade systemic inflammatory state, and that might exacerbate the neurovascular response of migraine. And so that might be one mechanism by which obesity contributes to increased frequency, as well as increased risk of having chronic migraine.

**Paula K. Dumas (05:23):** People with chronic migraine — more than half the days of the month — appear to be either quite overweight or quite underweight. Do we know why?

**Dr. Bond (05:32):** So, in terms of the research, I haven't seen as strong of a relationship with underweight, but with obesity, again, individuals with obesity seem to be at higher risk for progression to chronic migraine. And there hasn't been a lot of research on mechanisms, particularly directly testing those mechanisms. But one of our hypotheses is that individuals — with chronic migraine, in particular — they might be less likely to adhere to behaviors that contribute to weight loss. And so, chronic migraine might interfere with a person's ability to engage in lifestyle behaviors that are associated with a healthy weight. But again, this hasn't been directly tested, but we think it's a plausible hypothesis.

**Paula K. Dumas (06:15):** I mean, it's a plausible hypothesis, when you consider that when you have chronic migraine, it's kind of hard to get off the couch some days — let alone exercise, let alone eat exactly what you're supposed to. There's only so many beasts you can slay at one time.

**Dr. Bond (06:30):** Right. And then, if you think about someone who has a headache on that many days of the month, and that they're feeling nauseous and so forth, and then after the attack, they ... might eat a higher amount of calories than they normally would, trying to compensate for the time that they couldn't eat.



**Paula K. Dumas (06:49):** Sometimes the choice of foods — I would eat white food after attacks, for some reason. I would crave mashed potatoes and lemonade. Those are terrible choices. So, maybe there's something going on with the food choices that we're making, as well, that are part of either the medication or the migraine mechanism.

**Dr. Bond (07:09):** Yeah. I think that that research is truly in its infancy, and we need to understand more.

**Paula K. Dumas (07:15):** Yeah, definitely. So, you mentioned inflammation and we know that there are many migraine symptoms that are related to digestion. Some experts who we've interviewed on the Migraine World Summit believe that there's a plausible gut-brain connection that's going on with migraine. What does the research say?

**Dr. Bond (07:32):** I also think that's possible. I'm not an expert in gastrointestinal health, but some of the research that I have seen is that, particularly when obesity is coexisting with a GI disorder, that people are at higher risk for having migraine. So, for example, when obesity is comorbid with irritable bowel syndrome, those individuals seem to have higher risk of migraine than if obesity is not present. So, I think there's an interaction going on between obesity and some of the GI disorders that we see.

**Paula K. Dumas (08:03):** And with respect to inflammation: What does the research say about inflammation? Do we have any data on that?

**Dr. Bond (08:09):** We don't have as much data on that. And so, there's some research that suggests that individuals with migraine have higher levels of inflammation. But in terms of testing directly the relationship whereby obesity contributes to migraine via increased inflammation, we still don't have that direct link yet.

**Paula K. Dumas (08:32):** That's an area that I'd love to see more research done, because I think there's some pretty good research about inflammation and pain, but not inflammation and migraine. So, let's talk a little bit more about weight loss. So, if weight is a modifiable risk factor for migraine, I want to figure out some practical ways that people can reduce weight safely — including me! Are there any weight loss tactics that can actually make migraine worse?

**Dr. Bond (09:01):** So, some of the things that we might want to avoid when first starting a weight loss program, particularly for individuals with migraine, is that we want to make dietary changes gradually rather than just all at once, because some individuals may have dietary triggers that they may not even be aware of. Also ... we want to avoid fasting, things of that nature, that are going to reduce blood glucose level. And when we do that — headache is often a symptom of that, so we don't want to trigger a headache that way. We also don't want to drastically change our consumption of certain stimulants, like coffee. That could also be a risk factor. And, although the research on dietary triggers is still — it's kind of a messy research, and we're still trying to disentangle what are actual dietary triggers for individuals with migraine. It seems to be highly variable. It's that we might want to caution against things like artificial sweeteners, as well. And finally, for a small subset of individuals, vigorous exercise may actually be a risk factor, but overall, the level of the benefits of physical activity far outweigh the risk for someone who has migraine.



**Paula K. Dumas (10:19):** Before jumping off the weight loss tactics, any opinion on fad diets or weight loss supplements?

**Dr. Bond (10:27):** I don't think, again, we know enough about that, but I would strongly advocate for a healthy, varied diet, one that is more mainstream — for example, the Mediterranean diet — versus any sort of fad diet or taking a weight loss supplement for which we don't know the health effects, particularly in somebody who has migraine.

**Paula K. Dumas (10:48):** So you've done some interesting research on how behavioral weight loss and migraine education can reduce migraine. What did you find?

**Dr. Bond (10:58):** We can talk to the first randomized, controlled trial in which we tested behavioral weight loss as a treatment for migraine. We randomized individuals to either a 16-week standard behavioral weight loss treatment or a migraine education. We match those conditions for therapist contact, so that we couldn't have any sort of extraneous factor that might explain the findings. In the behavioral weight loss group, we didn't talk about migraine at all, and in the migraine education [group], we didn't prescribe weight loss. And so, these were very well-matched, and a strongly controlled study. And what we found was that both groups, actually, resulted in significant reductions in migraine headache frequency, as well as severity and other parameters. And that was immediately after treatment, and then those effects were also sustained 16 weeks after that, after a period of no treatment. And so, contrary to our hypothesis, is [that] behavioral weight loss was not superior — that both groups were actually highly effective treatments.

**Paula K. Dumas (12:04):** Well, we were really excited to hear about the study, because we do migraine education. And it seems that even for people who choose not to pursue behavioral weight loss, or don't need behavioral weight loss, you even prove that migraine education alone can reduce migraine, right?

**Dr. Bond (12:22):** Yes, that's true. I think that some other things might be at play is that, the migraine education was also very intensive. And so, we had our women patients come in in groups. I think the group effect might've also had a positive influence, as well, in that our participants could provide each other support. Also, in terms of the migraine education, it would be interesting to see if something that is not as intensive — because migraine education usually is not provided 16 weeks in a row — it would be interesting to see if a less intensive migraine education would have the same effect.

**Paula K. Dumas (13:06):** Yeah, it would. That would be interesting. I also, to pick up on one of your points about community, I feel like people in communities who are pursuing a healthier life get healthier together; that that support that we need — for, whether it's weight loss, or migraine management, or managing diabetes, or any other thing — that kind of support piece is really important.

**Dr. Bond (13:30):** Definitely. Very much so.

**Paula K. Dumas (13:33):** So, you mentioned inflammation; we touched on that briefly. Following an anti-inflammatory diet seems like it would reduce inflammation, and therefore, pain. Is there any harm in a person with migraine testing a sugar-free, dairy-free, or low-carb diet?



**Dr. Bond (13:51):** Again, I am not a dietician, in terms of my expertise. But, for example, the Mediterranean diet is a very anti-inflammatory diet, and that's something that we would regularly prescribe to our participants, not just with migraine, but who also have other obesity-related comorbidities, like diabetes.

**Paula K. Dumas (14:11):** Catherine is in our community, and she specifically asked about an interest in reducing inflammation with supplements. So, have anti-inflammatory supplements like turmeric, omega-3, or capsaicin been tested among people with migraine, and are they effective?

**Dr. Bond (14:31):** That's not really my area of expertise, so I would defer to some of my nutrition colleagues to answer that question more definitively.

**Paula K. Dumas (14:41):** I know omega-3 is certainly something that is considered to be healthy for people with migraine, so that one probably can't hurt, regardless, but we — neither one of us can really speak to turmeric or capsaicin. So that's good to know. Let's pivot to exercise. We are discussing exercise in another interview, with Dr. Richard Lipton. Are there any important considerations that you would recommend for how someone with migraine approaches exercise for weight loss?

**Dr. Bond (15:12):** Exercise, I think, in general has gotten a bad rap in the migraine community. And I think that the benefits of exercise far outweigh any sort of risk. And we have to remember that it's only for a very small subsample of patients for which exercise reliably — I mean, consistently — could provoke a migraine attack. And so, I think that in terms of aerobic exercise, we would generally tell our patients to start with walking — it's easy, it's safe, it's cheap, it's practical — and to do that regularly. And so, that may reduce migraine and may prevent migraine attacks through physiological mechanisms, such as inflammation, better cardiovascular health, even some weight loss with exercise alone. But you get a bigger bang for your buck if you combine exercise and dietary modification.

**Dr. Bond (16:13):** But also, psychological mechanisms, for example, reduce stress: Individuals who exercise regularly have lower levels of stress. And we know that stress is a big trigger of migraine attacks. And also individuals ... who exercise regularly tend to sleep better, and we know sleep is associated with migraine. And so, again, I would strongly recommend partaking in a regular program of moderate-intensity exercise. And even if you feel — for someone who has migraine and feels that there's a strong relationship between the exercising and their attacks occurring, is that they can try different forms of exercise. So, for example, hatha yoga: Hatha yoga might be particularly efficacious for somebody with migraine, because it actually works on some of the mechanisms that we see — for example, neck pain and stiffness, anxiety, and catastrophizing about pain — and also reduces stress. So we see some of the same mechanisms at play, even though yoga per se is not an aerobic exercise.

**Paula K. Dumas (17:21):** Yeah. I think it's experimenting with different types of exercises. Some exercise, you're exposed to additional triggers that add up and push you over your threshold. So, I used to play tennis in the summer, and between the bright light, and the humidity, and the heat, as well as incoming changing barometric pressure, and the exertion — all of those things together would do me in, right? And I would lose a day for playing a couple of hours. On the other hand, if you take out the sunlight and the humidity — you can't change the weather — but if you take out a couple of those factors and do something



that is indoor, or you're well-guarded with glasses, for example, that can block out the FL-41 rays, those kinds of things are solutions that may help some people, right?

**Dr. Bond (18:19):** That's a really good point, yeah, in terms of taking into account the environment in which you are exercising. And in your case, for example ... if you're exercising in the heat, you can be at greater risk for dehydration, which is another risk factor. And so, particularly during those hot days, you would maybe want to exercise in the early morning, to try to avoid that heat and the humidity.

**Paula K. Dumas (18:43):** So, we know that you've done some research also on bariatric surgery for weight loss and migraine. Tell us what you learned there.

**Dr. Bond (18:53):** We conducted some of the first research looking at changes in migraine after bariatric surgery. So, individuals who undergo bariatric surgery tend to have more severe obesity, and bariatric surgery is a much more powerful weight loss method than what we tested in the WHAM [Women's Health and Migraine] trial, which was behavioral weight loss intervention. And so, with bariatric surgery, you're achieving about three times the amount of weight loss that you would with lifestyle intervention. But what's really interesting, what we've learned, is that despite the much larger weight loss, we don't see much difference in terms of the magnitude of migraine improvement between bariatric surgery and lifestyle intervention. So despite these large differences in weight loss, we still see very similar effects on migraine. And so, what this tells me is that, perhaps weight loss is not the only mechanism at play, and in fact, it may not be the primary mechanism.

**Paula K. Dumas (19:56):** So, is it the weight itself that is causing inflammation that might be playing into the migraine mechanism?

**Dr. Bond (20:03):** So, weight loss might be producing reductions in inflammation. And so, for example, with the behavioral weight loss intervention, we had individuals who were interacting as they were altering their behavior. Bariatric surgery doesn't involve those active changes in behavior, unless a person is actually doing that on their own — and so, no one's actually prescribing that to them. But bariatric surgery may have effects on diet that might be associated; however, these changes are not always voluntary, particularly in the first year after surgery.

**Paula K. Dumas (20:40):** Bottom line: What is the first step that someone with migraine and who is overweight should take?

**Dr. Bond (20:48):** If they want to try to do this through lifestyle means, [it] is to start making small changes in their physical activity, in their sleep, and in their diet. And so, just starting with small changes, we want a safe rate of weight loss, about one to two pounds per week; just trying to find more opportunities throughout the day to move and to sit less; even making small dietary changes. So, changing from a high-fat salad dressing to a low-fat salad dressing; starting with that, before making drastic changes in the diet. And over time, these smaller changes are going to accumulate and are going to have an impact on your weight. And once you start building confidence with making some of those smaller changes, it's then you'll feel more confident when you try to undertake larger changes, while making more systemic changes to your diet, for example.



**Paula K. Dumas (21:47):** It sounds like you're inferring that we should have a longer time horizon. We shouldn't try to do this quickly, because the migraine brain doesn't respond well to rapid change, but have a longer time horizon for setting our goals for weight loss.

**Dr. Bond (22:03):** Definitely. It's that we don't want weight loss to be a phase. We want this to be a lifestyle change. And so, for example, when I'm trying to motivate my patients to exercise more, I say that they should view exercise like brushing their teeth: It's just something they should do every day. It should be a priority. And so, I think that we need to view this more as a lifelong change, as a permanent change in our lifestyle.

**Paula K. Dumas (22:36):** Good advice, good advice. And putting exercise first, and healthy eating first, and then filling it in with work, and kids, and social, and all the other things that are drawing us away from that.

**Dr. Bond (22:52):** I also think that we tend to neglect sleep. I think we need to look at our whole 24 hours. And we need to think about our health on the 24-hour clock, not just when we're awake.

**Paula K. Dumas (23:04):** I think many people with migraine put themselves last, and unfortunately, that comes at our own expense. So, some good encouragement. Any final thoughts or words that you would give to our community that's struggling with this and trying to figure out a good path forward?

**Dr. Bond (23:23):** It's that losing weight, particularly when you're starting any sort of lifestyle change — there's going to be peaks and valleys. And sometimes it's going to be more difficult; sometimes it's going to be easier. But again, as you mentioned, we have to think about this long term; this isn't just a phase. And so, it's like life: There's some ups and downs, but we have to kind of keep getting back on the horse.

**Paula K. Dumas (23:49):** Let's get back on that horse! Thank you for your encouragement. I appreciate it, and I'm sure that many others in our community will, as well. If somebody wants to learn more about you and follow your work or find out what you're doing, how do they get in touch with you?

**Dr. Bond (24:03):** They can email me at [dbond@lifespan.com](mailto:dbond@lifespan.com). Also, my profile is up on the Brown University website. They can also take a look at some of my work there, as well as my contact information there, too.

**Paula K. Dumas (24:19):** Dr. Bond, thank you so much for joining us on the Migraine World Summit.

**Dr. Bond (24:23):** Thank you for having me.