Episode 34: The One Where I Talk About Topical Magnesium

Katie: Hi and welcome to the Wellness Mama Podcast. I'm Katie from wellnessmama.com. Did you know that there is one substance that is the eighth most abundant mineral on Earth, the third most abundant in seawater, and more importantly, it's the fourth most abundant mineral in the human body. It's necessary for over 350 enzymatic reactions in the body, and it's used in emergency rooms to help heart patients as well as on-pregnant women to delay early labor and for many other uses. And if you haven't guessed by now, this product is magnesium and I'm gonna be talking a lot about it today in this podcast because I feel like it's one of the most important health issues that's not being talked about is magnesium deficiency. Before we go on though, I wanted to mention that there's a sponsor for this podcast, unofficially, and something I'm just trying out for the podcast to help cover my time and cost of editing it. And the sponsor for this first inaugural sponsored podcast is the Wellness Bundle which is a bundle of 40 Ebooks and e-courses through Wellness Media.

And it's an amazing deal, there's over, like I said, 40 Ebooks and they're about 60 cents each with the bundle. The bundle itself is under $30, and you get a literal library of health information in books, and it's only available until May 25th. So if you're listening before then, go to wellnessmama.com/go/wb for Wellness Bundle, WB, and you can get it there at a discount while it's still there. But back to the topic at hand, I have been talking about magnesium for the last, probably, four and a half year on wellnessmama.com and it's because when I first started researching all my own health issues, my thyroid troubles, my hair loss, my skin issues, fatigue, I kept running into magnesium in all of these studies. And I also was finding it in studies about things like heart disease or mental problems, and I really wondered what is this connection and why is magnesium showing up everywhere? And there's over, I think, 3,500 published studies on this that I've seen on PubMed and other sources and it's just fascinating, the body of research out there, but it's also a little scary how little it's talked about.

Most mainstream doctors are very well aware of magnesium, emergency room physicians give intravenous magnesium to people who have an irregular heartbeat or who are having heart trouble. Pregnant women with high blood pressure are often given IV magnesium to reduce their blood pressure. And it's also sometimes used to help prevent pre-term labor because it helps reduce muscular contractions which, ironically, it actually lead to an easier labor for me with my last baby probably because it helps the intensity of the contraction. So she was my easiest labor by far. But when I really start delving into this, I just became alarmed that it's not talked about more especially because there are so many factors in the last few decades especially that have reduced the amount of magnesium that all of us are consuming. So many of us are not even getting the recommended daily allowance or RDA of magnesium to begin with, and a lot of top experts and doctors including Dr. Mark Hyman of the Cleveland Clinic say that the RDA is too low and that most of us should be getting a lot more.

I believe, the RDA depending on weight and body type is somewhere from 300 to 400 milligrams, and I know I've seen Dr. Hyman recommend as much as 1,000 milligrams or more for adults because the body needs magnesium so much. Magnesium also works synergistically with other minerals and vitamins especially calcium, vitamin D, and vitamin K, and I'll talk about those more in-depth, but I just thought that that was a really important topic that isn't covered. So to go back to magnesium a little bit, it's estimated by some experts that about 80% of the population is deficient, but I've recently seen estimates that that could actually be really low and that probably more like as much as 99% of it, 99% of us are deficient in magnesium. And like I said, this goes backs to a lot of factors in recent society, but every single cell in the body needs magnesium to function properly. So for strong bones and teeth, we need magnesium, for balanced hormones, for our nervous system and cardiovascular function, as well as our body's natural detoxification pathways.

Which goes back to something called the sodium-potassium pump that's within our cells, and magnesium helps control the function of that pump. So if you look at the body, the tissue that often contains the highest concentrations of magnesium are the brain and the heart. And these are two organs that also produce the highest amount of electrical activity and this makes sense because magnesium is a mineral, and it helps deal with electrical...it's a solution essentially, so it helps the electrical activity of the brain and the heart. So these two organs are especially vulnerable to magnesium deficiency. And I've mentioned magnesium ratios and these are especially important for the body to correctly use calcium, so even a small deficiency in magnesium can lead to a dangerous calcium imbalance. And you might have heard of something called calcification of cells. This happens even in the arteries which can be related to heart problems, and they believe that this occurs when there's too much calcium and too little magnesium in the body.

And I mean, to deviate from that for a second, so calcium is a very well-known mineral and I think the last statistic I saw said that the dairy industry spends over $300 million a year just marketing the importance of calcium. So here's the problem with calcium. There's a lot of supplements that I take daily even when I'm eating a really nutrient rich-diet because it's really difficult to get certain nutrients from food anymore. But other vitamins and minerals, like calcium and sometimes folic acid and iodine depending on if you're eating processed food or not, are actually over-abundant in our current food supply, and for this reason, taking them supplementally can be harmful according to some doctors. So calcium is obviously naturally found in dairy products, and it's often added to dairy products and dairy substitutes like almond milk or coconut milk. But it's also added to many processed foods, I already mentioned cereals, but it's also often added to breads and juices, and many people also take calcium supplements especially during pregnancy and post-menopause.

But there's a lot of recent research that kind of calls this practice into question. So, like so many other nutrients, calcium needs cofactors which are other vitamins and minerals to be absorbed, but without these calcium supplements are not bioavailable and they may actually be harmful. So a 2012 study published, I believe, in the "British Medical Journal" showed that those who took calcium supplements had 139% higher risk of heart attack, though this increased risk was not present when the same amount of calcium was consumed from the whole food sources like sardines or fermented dairy products. And what's interesting is the correlate of study found a 70% reduction in heart attack risk in women who had high levels of magnesium in their body which really explains also that cofactor relationship and why they need to be in balance. And there have been follow up studies that showed this as well. A 2012 meta-analysis showed that calcium supplementation increased the risk of stroke, heart attack, and death from all causes.

And a 2013 study published in the "Journal of the American Medical Association" showed that supplementation in excess of 1,000 milligrams a day was associated in an increased risk of death from cardiovascular disease. And there have been others showing a link from too much calcium supplementation to increased risk of kidney stones and prostate cancer. And I believe Chris Kresser recently showed that this risk is even higher in women saying that, "A recent Swedish study reported a 40% higher risk of death among women with high calcium intakes which, in this study, was over 1,400 milligrams and 157% higher risk of death if those women were taking a 500 milligrams supplement daily compared to women with moderate calcium intakes." So when we really delve into why is calcium a problem? And there's two possible reasons. So researchers speculate that when supplemental calcium is taken, it can't all be absorbed at once often, and the excess is then left circulating in the blood which can lead to calcification of the arteries or that it can be excreted in the urine which can lead to kidney stones.

And there's a definite correlation with magnesium levels, and we'll touch on that in a minute, and it goes back to that sodium-potassium pump. But the other theory is that it's very difficult for the body to absorb a lot of different forms of calcium especially when they're taken in isolation and the body needs cofactors like vitamin K2, magnesium, and vitamin D to be properly utilized. So in the absence of any of those factors, it can be a problem. And obviously calcium is most often recommended for bone health, but what's interesting is the recent research shows that it really isn't a silver bullet for bone health at all. In 2012, a study showed that supplemental calcium which is, again, above the recommended amount from food did not increase bone density or reduce fracture rate. And some studies have actually shown an increase in fracture rate with calcium supplementation alone. And in 2013, the "United States Preventative Services Task Force" reviewed all the available studies and changed their recommendation to say that they recommend that postmenopausal women stop taking supplemental calcium which seems counterintuitive after all the marketing we've seen about calcium.

But food sources of calcium like dairy, and bone and meat, and certain types of fish especially canned fish with bones were actually shown to be beneficial for bone health without the increased risk of cardiovascular and other problems which like many things, it goes back to if you can get it from food, that's the best way to get it. Now a lot of these studies looked at dairy, and dairy is obviously the most common source of calcium, but there's some confounding information there. So, some studies show that dairy consumption reduced the risk of osteoporosis, hypertension, and other problems associated with diseases. There are people in the natural health community that claim dairy's actually bad for your bones because dairy products cause the body to become more acidic which they say pulls calcium from the bones so that the body will re-alkalize. I think Chris Kresser has written a post specifically on this, but a 2011 study reviewed this theory and found absolutely no scientific evidence to substantiate it.

So there can certainly be problems with dairy consumption, but it creating an acidic environment in the body is not one that I have found any scientific backing for. So, a last little bit on calcium, and then we'll move on. But if you're gonna consume supplemental calcium, my favorite is always to go to food sources which are statistically the safest based on the literature. And I think this is across the board, if you can get any specific vitamin or mineral from food, that's always a great way to do it. So obviously, dairy can be controversial, some people definitely do not tolerate it well. It is a good source of calcium, but it's by no means the only source, and there are some sources that are actually better. And also what's interesting some research including some research as far as back the early 1900s with Dr. Weston A. Price showed that the most beneficial part of dairy, especially raw dairy, for bone health may actually be the vitamin K2 and not calcium.

But there are great non-dairy sources of calcium like sardines in a can, salmon either with the bone in, cooked or in a can, okra, leafy greens, blackstrap molasses, and other great foods that you can get it from. Now, I mentioned cofactors. So cofactors are vital for calcium absorption in the body. In isolation, calcium, and this is true with a lot of nutrients, can be harmful. We talked about that. There's a really good book called "Vitamin K2 and the Calcium Paradox" if you're interested. And it explains in-depth how vitamin K2 is needed for proper utilization of calcium and how calcium consumption without vitamin K2 can lead to health problems. And vitamin K2 is found in raw dairy, but it's also in liver, in aged cheeses, and natto which is a fermented soy product. And you can also get it in supplemental form in a lot of different places. Other cofactors for calcium include vitamin D and magnesium which obviously we're gonna talk a lot about more now. So just as calcium can be bad in isolation, magnesium almost shows the exact opposite in studies.

We actually need it a whole lot in isolation because we are not getting it from food like we are with calcium.

And this is unfortunate because this was not always the case. Most of modern farming practices tax the soil, so what foods that used to contain high levels of magnesium don't necessarily can get it anymore. And on top of that, a lot of hybrid plants are selectively-bred to survive low levels of magnesium and most fertilizers use nitrogen, potassium, and phosphorus, but do not replenish the soil's magnesium levels or the plant's magnesium levels. So we've got, and these are not necessarily genetically-modified plants, but even just selectively-bred plants are bred to not need as much magnesium anymore. So even our water was once our great source of magnesium, but it's not anymore because for several reasons, in most cases. So a lot of municipal water supplies add fluoride which fluoride binds with magnesium which creates an almost insoluble compound that ends up in the bones where it's brittleness increases the risk of fractures.

Now, this is also a separate topic for a separate day, but fluoride, this is why it's shown to make the bones harder which it does, but it also makes them more brittle. So while water could be an excellent source of magnesium if it came from deep wells that had magnesium in their source or from maybe a mineral-rich runoff of a glacier, urban sources of drinking water are usually from surface water or groundwater like rivers and streams which are low in magnesium. And even many bottled mineral waters actually low in magnesium or they have a high concentration of calcium which we already showed, you need them in balance. So even if there's magnesium, if there's too much calcium you're not gonna get the benefits. But there are also a lot of dietary factors that deplete magnesium and perhaps you have a few of these even if you eat really healthy. So consumption of caffeine can deplete magnesium, consumption of any type of sugar can deplete magnesium. In fact, it takes 28 molecules of magnesium to metabolize a single glucose molecule.

Consumption of most processed foods, again because they have calcium, so you need even more magnesium to balance that out. Consumption of alcohol, consumption of produce from conventional sources or depleted soil, or consumption of foods high phytic acid which phytic acid reduces magnesium. Additionally, we have a lot of lifestyle factors. Drugs like birth control pills, hypertension medicine, diuretics, insulin, antibiotics, and others can deplete magnesium levels. And even things like sweating from exercise can deplete magnesium. So, it's something that we're always losing, but many of us are not taking steps to replenish. But why is this so important? Why is magnesium is so vital? I know I have talked about this a lot in the past and even recently, I've been talking about it more and more because I think this is a growing issue of importance and I just like to be really upfront that's why I'm even doing a podcast on it this week.

People may be tired of me talking about this topic, but I really do feel like it's so important because magnesium is necessary for hundreds of functions in the body, well over 300. It gives rigidity and flexibility to your bones. So it can actually be more important than calcium in some in cases, and it's needed with calcium for them both to be effective. So it makes calcium more available in the body, it makes it use correctly. So it's not just floating around in the bloodstream. Magnesium helps to regulate and normalize blood pressure. Because of the calcium issue that we talked about under calcium where calcium is excreted in the urine, having enough magnesium helps avoid kidney stone formation. Because it's considered a calming mineral, it often leads to restful sleep. And back to the calcification issue, magnesium helps avoid calcification of the arteries because, again, you got the magnesium and calcium imbalance and that can help prevent congested heart failure.

So it just really goes across the board. I noticed in my own life when I was having muscle cramps and spasms during pregnancy, it tended to go back to the magnesium not the potassium. You always hear it's potassium, but it's really not that. And when I started supplementing with magnesium, I felt better almost immediately. I know people with fibromyalgia and chronic pain that noticed a difference from magnesium. Same with people

with migraine headaches or headaches from different types of problems. A doctor local to us recommends it for women with osteoporosis because it again helps with the bone formation. So there's really so many interesting and important uses of magnesium in the body. And I think the most kind of shocking and the most menacing at this point is the correlation of increased magnesium levels and reduced risk of heart problems. So some observational studies have shown that higher blood levels of magnesium, lower the risk of coronary heart disease. And dietary studies have also shown that this may also ring true for strokes.

So if you have enough dietary magnesium or supplemental magnesium you might lower your risk of a stroke. People with abnormal heart rhythms are often given magnesium to help correct that. And there's even some research showing that improving magnesium levels may improve the risk of complications even after someone has had a heart attack or a stroke. So I really wanna delve into what I consider probably the 10 most menacing problems that can occur as a result of magnesium deficiency, and like I said, I think the first and the most dangerous is calcification of the arteries and an increased risk of cardiovascular disease. And if you actually just Google "magnesium deficiency and cardiovascular disease studies," you'll find a lot of studies that have shown this link. And of course correlation does not equal causation, but when you've got that correlation going with both ways where deficiency can cause problems and supplementations can reduce problems, it typically is a good bet that it might be something good to do.

Hopefully, this is not the first symptom a person will have of magnesium deficiency, but it can definitely be one of the most dangerous. So calcification of the arteries from low magnesium levels can lead to coronary problems like heart attack and heart disease which makes sense because again your arteries are hardening making it harder for blood to pass through and they can easily become clogged. In fact, half of all heart attack patients who go to the hospital receive injections of magnesium chloride to help stop the blood clotting and the calcification. And I'm really curious to see the emerging data on maybe if we could reduce these risks in the first place if we made magnesium supplementation more widespread. I mentioned muscle spasms and cramps, and this is an area I personally noticed a difference from magnesium supplementation. And just as calcification in the arteries, it causes stiffening there. This can also happen in the muscles causing stiffening of the muscles which can lead to cramps and spasms.

And women often experience these in pregnancy when there's an increased demand for magnesium and other minerals in the body. And this process can happen more easily. So I had horrible leg cramps during one of my pregnancies and potassium did not help me at all, and magnesium, topical magnesium, fixed my problem almost instantly. And this also goes back to the idea of that sodium-potassium pump and why that is so important. So each cell in our body has a sodium-potassium pump that regulates the balance of minerals inside and outside the cells. If we're deficient in magnesium, this pump can't work correctly. So with too much calcium, the ratios are skewed and this allows too much calcium into our cells. But if we have too little magnesium in our body, the same reaction happens and even more calcium is allowed into the cells. Now a third area where magnesium deficiency is especially interesting is with mental health and especially with anxiety and depression. So there's a lot of research showing that magnesium deficiency can have a tremendous impact on mental health.

And there's a recent article in "Psychology Today" that said that, "Magnesium hangs out in the synapse between two neurons along with calcium and glutamate." And if you recall, calcium and glutamate are excitatory, and in excess, toxic. They activate the NMDA receptor. Magnesium can sit on the NMDA receptor without activating it, like a guard at the gate. Therefore, if we are deficient in magnesium, there is no guard at this gate. Calcium and glutamate can activate the receptor like there's no tomorrow. In the long term, this

damages the neurons eventually leading to cell death. In the brain, this is not an easy situation to reverse or remedy. So for me, I haven't ever experienced really severe anxiety or depression, but I've noticed since using magnesium consistently that I definitely have fewer stressed out moments with my kids which is a definite plus as a mom. So fourth area that you see impact of magnesium deficiency is with high blood pressure or hypertension, and this is perhaps one of the best, most well-studied areas of magnesium deficiency.

A Harvard study looked at over 70,000 people and found that those with the highest magnesium intake had the healthiest blood pressure numbers and a follow-up meta-analysis showed that there was a dose-dependent reduction of blood pressure with magnesium supplementation. And a lot of pregnant women, like I said, are given magnesium supplements or IV magnesium during pregnancy to keep their blood pressure in a safe range. And a University of Minnesota study also found that the risk for hypertension was 70% lower in women with adequate or high magnesium levels. So the fifth area that magnesium deficiency is really interesting is in hormone problems. I personally saw this effect a lot myself. So the higher the estrogen or progesterone levels in a woman's body, the lower typically the magnesium level because there's an inverse relationship there. Again, going back to pregnancy when the hormones are high, magnesium tends to be lower and more problems can occur. And this is why again, pregnant women may experience more leg cramps.

And also why women may notice an increase in things like menstrual cramping or PMS which is a mental issue as well leading up to their period when estrogen and progesterone are high, so magnesium is more depleted. Interesting fact, chocolate is a pretty decent source of magnesium and there's a lot of speculations that cravings for chocolate may be a sign for magnesium deficiency. And it's interesting that women often talk about craving chocolate when they're PMSing, so there's a really interesting fact that maybe the body has some wisdom there. And muscle cramps related to the menstrual cycle can also be related to magnesium levels. And Dr. Carolyn Dean who wrote a book called "The Magnesium Miracle" often recommends that women with bad PMS and cramps start taking magnesium early in their cycles before the symptoms begins to help really mitigate that. And just as, obviously magnesium can affect hormone problems in non-pregnant women, it also can lead to a lot of pregnancy complaints if we don't have enough magnesium.

So just like above, I noticed this drastically with my last pregnancy, I had always had some level of morning sickness, and definitely not to complain, I was never hospitalized and I have friends who had it so much worse. But I noticed that my morning sickness was almost non-existent in my last pregnancy when I was consistently using magnesium to the point that I almost, I went to the doctor to get a blood test to make sure I was really pregnant because I didn't feel bad. And magnesium, as I mentioned, is often given in pregnancy, for hypertension and muscle cramps, and also in the hospitals to ward off pre-term labor and alleviate headaches related to pregnancy. So I always stick to transdermal or like topical magnesium during pregnancy just because it's the safest, and also because internal magnesium can cause digestive disturbance. And especially for me, that was true when I was pregnant when my stomach was more sensitive. And to switch gears a little bit, so magnesium deficiency is also really interesting when you look at sleep patterns.

With all of the things we talked about with magnesium deficiency, it really makes sense that magnesium would have an impact on sleep. But it's so drastic that the impact is almost immediately noticeable when a person starts taking magnesium. And I have a blog post about magnesium like I said that is four years old, and there are probably hundreds of comments on that post from people who started using magnesium and slept better. And Dr. Mark Hyman of the Cleveland Clinic calls it the ultimate relaxation mineral. So Magnesium helps relax the body and the mind, obviously, both of those help with restful sleep. But there's another interesting factor. So, magnesium is needed for proper function of the GABA receptors in the brain, and this is

a neurotransmitter that allows the brain to transition to a restful state. So when we don't have enough magnesium, this process can be impaired and improving magnesium levels can help with that brain transition to restful sleep. And just as how magnesium helps the brain, there's also a correlation between magnesium deficiency and low energy for a similar reason.

So the body uses magnesium in the cells when the body creates ATP. So if we flash back to freshman biology, ATP or adenosine triphosphate is the main source of energy in the cells and it must bind to a magnesium ion in order to be active in the cells. So without magnesium literally our cells cannot turn on which means you don't have energy on a cellular level, and this can show up as fatigue or just low-energy levels, lack of drive and other problems related to that. So really magnesium, is kind of far-reaching in its effects. And I already mentioned bone health when we're talking about calcium, and in cases of magnesium deficiency, the bones actually suffer in several ways. So too much calcium is a problem, and magnesium deficiency can cause two other problems. Without magnesium, we have trouble absorbing vitamin D because magnesium is needed for vitamin D to turn on calcium absorption. Again, there's all those cofactors especially calcium, magnesium, vitamin K2, and vitamin D.

But this is also why it's important to get enough magnesium when you're taking vitamin D. So personally, for a long time I was taking vitamin D, spending time in the sun, and my levels were still a lot lower than my doctor liked and we couldn't really figure out why, and it wasn't until I started really upping my magnesium that my vitamin D levels rose, and it's because of that connection. And as a side note, we found out later than if you are taking vitamin D especially at high levels, you wanna take more magnesium because it can further deplete your magnesium levels. But as I mentioned with the cofactors, magnesium is needed for proper calcium use. So if you're taking calcium for your bones, but not magnesium, it's really not gonna do you much good because magnesium is needed to stimulate the hormone calcitonin which draws calcium out of the muscles and soft tissues and puts them in the bones. And this helps, helps again explain why taking magnesium helps lower the risk of heart attack, osteoporosis, arthritis, kidney stones, etc.

And then lastly, we've already really mentioned this a lot, but magnesium is important to prevent other mineral deficiencies. So, vitamins and minerals work synergistically, they don't exist in a vacuum and magnesium is a workhorse when it comes to this synergism. It's needed for proper utilization of calcium, potassium, vitamin K, vitamin D and so many other nutrients. So making sure you have adequate magnesium levels can really help not only with just magnesium but with other vitamin levels in your body. And the solution I found that at least has worked the most of our family is to use topical magnesium. And there are definitely so many options out there when it comes to different forms of magnesium and you can get pills and tinctures, and honestly, I've tried all of them and the one that has worked the best and bothered us the least is topical. And the most recent estimates I've seen from experts is that when you take magnesium internally, only about, if you're lucky half of it gets absorbed.

And the rest just leaves the body as waste after passing through the kidneys. But some experts say that it could be as little as 20% actually gets used. So not only are you financially wasting a lot money because you're just peeing out your extra magnesium but again the risk for kidney stones is there. Whereas with topical magnesium, you don't have to go through the digestive system or the kidneys. So that magnesium can pass more immediately into the blood and the soft tissues of the body where it can be used. And again, less risk for kidney stones there. So I've been making homemade magnesium oil for years, and that's definitely one way you can do it. But I was getting a lot of complaints from people who were getting like an itchy, tingling situation which is just because this form of magnesium chloride can cause that sensation on the skin as it

travels through the skin. And then also because it's a salt and a mineral, it can leave skin very dry. And I recently found a form called magnesium chloride hexahydrate or MCH which has not caused that problem for us.

So with regular magnesium chloride, I was only using it on my children's feet because it would bother their skin anywhere else. And this one, I've been able to use on their whole bodies because it doesn't create that same reaction. And it's a type of topical or transdermal magnesium that has been most effective for us, and that it doesn't cause the itchy, tingling sensation and it's because that form is more immediately usable by the body. So there's less of a reaction as it goes through the skin. If you're interested in checking that out, you can go to wellnessmama.com/go/magnesium and there's more information about it and how it works. But just as a mom, and to any of you fellow moms out there, I would just say really research magnesium if you think it's something that might help you because it's been a drastic, drastic really difference for us in our family in so many different ways. And I think so many people could benefit from using it regularly.

And again, if you wanna find out more, just wellnessmama.com/go/magnesium and there's a lot more information there about the ways magnesium is used in the body. And even though it was just me today, I appreciate you listening and I really hope that you will consider researching magnesium more because I really feel like it's one of the most important things that many of us are not getting enough. Thank you so much for listening to this episode of the Wellness Mama Podcast where I provide simple answers for healthier families. If you would like to get my "Seven simple steps for healthier families guide" for free, head on over to wellnessmama.com, and enter your email. I'll send it over to you right away. You can also stay in touch on social media, facebook.com/endlesswellness or on Twitter and Instagram, @wellnessmama. And I would really appreciate it if you would take a second and subscribe to this podcast so that you'll be notified of future episodes.

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