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Magnesium and Mental Health

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Summary: Magnesium is an essential mineral that is responsible for a wide variety of functions in our bodies. Unfortunately, many North Americans do not get enough magnesium in their diet. As a result, many people are magnesium deficient, which can lead to symptoms such as problems with mood, sleep, energy, headaches as well as constipation, muscle cramps, spasms. The good news, is that increasing our dietary intake of magnesium, or taking magnesium supplements can easily correct this problem.

Notice Any of these Symptoms?

Early symptoms of low magnesium...

- Problems with mood (e.g. depression) or anxiety
- High blood pressure, rapid heart rate
- Loss of appetite,
- Nausea, vomiting,
- Fatigue, weakness, low energy
- Sleep problems
- Headaches including migraines
- Problems feeling excessively hot, due to problems with regulating body temperature
- Diffuse muscle pain or tightness (sometimes called myofascial pain)

Later symptoms of low magnesium...

- Numbness, tingling
- Muscle contractions and cramps; facial tics, eye twitches or other involuntary movements
- Personality changes
- Seizures
- Abnormal heart rhythms

If you notice at least a few of these symptoms in either yourself or a loved one, there may possibly be magnesium deficiency. Read on to learn more...

Why is Magnesium so Important?

Magnesium is the fourth most common mineral in the body. It is required for more than 300 enzyme reactions, and is crucial for adenosine triphosphate (ATP) metabolism, which is the energy that powers our cells. Other essential processes include making DNA and RNA, nerve transmission, muscle contraction, blood clotting, energy, metabolism and bone and cell formation.

As a result, imbalances in magnesium can have numerous effects on the body, such as causing problems with the nerves, the heart and other conditions.

The bottom line is that you need magnesium every day for good health. Magnesium helps you take energy from your food to make proteins needed by your body. It helps keep your bones, muscles and nerves healthy (Dieticians of Canada, 2014).

How Common is Magnesium Deficiency?

The Recommended Daily Allowance (RDA) of magnesium is:

For young adults

- 400 mg/day for men
- 310 mg/day for women

For adults over 30

- 420 mg/day for men
- 320 mg/day for women.

Unfortunately, studies have shown a high amount of North Americans are magnesium deficient. For example, half of the US population consumed less than the required amount of magnesium in their diet in 2005-6 (Rosanoff, 2012).

What Causes Magnesium Deficiency?

There are various factors that are believed to contribute to magnesium deficiency in today's modern times:

- We do not eat enough foods that would normally have magnesium.
- Even when we eat foods that should have magnesium, modern agricultural techniques have led to low magnesium levels in our soil and foods.
- The modern North American diet has high amounts of sugar which uses up magnesium.
- Stress may contribute to our bodies using up magnesium.

What are the Symptoms of Magnesium Deficiency?

Low magnesium is associated with various conditions such as:

- Brain and neurologic conditions such as:
    - Migraine headaches
    - Headaches
    - Attention deficit hyperactivity disorder
    - Alzheimer's disease
    - Depression
    - Pain syndromes
- Heart and cardiovascular
    - Diabetes

    - Hypertension
- Others
    - Osteoporosis

Although low magnesium is associated with various conditions, this is not the same as saying that low magnesium causes the aforementioned conditions. Seeing a physician is essential to take a closer look.

Magnesium for Specific Conditions

Depression: A 12-week study of 126 adults showed that magnesium supplements reduced some of the symptoms of mild to moderate depression (Tarleton, 2017). The dosage of magnesium was four 500 mg tablets of magnesium chloride daily for a total of 248 mg elemental magnesium per day. Unfortunately, there was no placebo control and no diet analysis. Nonetheless, the authors concluded that given that there are few side effects with magnesium, and given the potential benefit, one might nonetheless consider magnesium for mild to moderate depression.

Pain: Magnesium works to relieve pain by blocking a receptor in your body called NMDA. Migraine, tension headaches and myofascial pain syndromes are common problems that can impact your ability to function at school or work. Pain can also impact your involvement with family and friends and can be associated with depression, anxiety and sleep problems. There has been a lot of research using magnesium for various types of pain. Although some studies show benefit and others do not (CADTH, 2017), magnesium remains a reasonable and safe option to try as an alternative to stronger pain medications that can have side effects. If magnesium does not work to reduce your pain, it is important to seek medical attention to find safe and effective alternatives.

What Tests are there for Magnesium Deficiency?

Current blood tests are not felt to be accurate in diagnosing magnesium deficiency, because most of the body's magnesium is inside cells or in bone.

Although serum magnesium tests can be done, they are not felt to be a reliable indicator of how much magnesium is in the body. Even if a magnesium test is normal, this is misleading because magnesium stores can still be low elsewhere. Only 1% of the body's magnesium is found in the blood, and because any major changes in the levels of blood magnesium can have catastrophic consequences, the body always ensures that blood magnesium is in a good range, even if it has to do so by taking stores from elsewhere in the body's magnesium stores in the cells, tissues and bones.

Recommendations

Increase dietary magnesium. Ensure you are eating at least 5 servings of any of these magnesium-rich foods throughout the day:

Legumes

- 1 cup of kidney beans
- 1 cup of lentils

Whole grain / rice

- 1 cup of raisin bran
- 1 cup of shredded wheat
- 1 cup of oatmeal
- 2 slices of whole wheat bread
- ½ cup of quinoa
- 1 cup of brown rice

Fruit / vegetables

- 2 bananas

- ½ cup of boiled spinach

Protein

- Nuts
- Fish

Other

- Dark chocolate (with 500 mg magnesium in 100 g of cocoa powder)

Consider taking a magnesium supplement. As a North American diet may not provide enough magnesium, taking a supplement might possibly be helpful.

How much?

- Up to 350 mg/daily: For the average person, dieticians generally recommend that your supplement not exceed 350 mg per day, however, you may need a higher dose if you have a health condition; ask your health provider.
- 400 mg daily or more: However, if a person has health conditions, higher dosages may be recommended. For example, for preventing headaches in youth, the recommended dosage is 9 mg / kg, so for a 45 kg person, this would be 400 mg daily.

What type?

There are various types of magnesium, all of which can be purchased over-the-counter without a prescription. Some private insurance companies will pay for them when prescribed by a doctor, others will not.

- Magnesium glycinate: The preferred form of magnesium is magnesium glycinate because it is the best absorbed form.
- Magnesium oxide: As magnesium glycinate may be costly, magnesium oxide is a next best option.
- Magnesium citrate: This form is recommended for preventing headaches.

How Much is Too Much Magnesium?

Taking too much magnesium from food does not pose a health risk in healthy individuals because your kidneys can get rid of excess amounts in the urine. However, high doses of magnesium from dietary supplements or medications can cause diarrhea with nausea and/or abdominal cramps.

For Those Living in Ontario, Canada

OHIP+ will not pay for magnesium supplements.

For More Information

Magnesium: Fact Sheet from National Institutes of Health (NIH)
https://ods.od.nih.gov/factsheets/Magnesium-Consumer/

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About this Document

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