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Basic Nutrition for a Parent Who's Child has Celiac Disease

Introduction

Hello everyone and welcome to todays class about nutrition for children with celiac disease, otherwise known as a gluten intolerance.

I hope that is why everyone is here, and if it is not, I suggest you double check where you are supposed to be.

My name is Bill Grace and I am the instructor for todays course. I am currently a nutrition student at King's College with a background in exercise science. I am very excited to be here with you guys so I can help you help your children.

We're going to cover about 45 minutes of basic nutrition for your children and I'll share some resources for you guys to refer back to after this class. After that I'll give everyone a short break and well come back for another 45 minutes of the basics of celiac disease.

To start, "how old are your guys children?"

allow time for answers

So it sounds like were working with kids from age _____ to _____

Macronutrients

Lets start off pretty simple and talk about the macronutrients

The macronutrients, as I'm sure most of us know, are Protein, Carbohydrates (carbs for short), and Fats. There is a fourth, over looked macronutrient, anybody want to take a guess what it is?

right or wrong answers ; Yes it is water. We'll talk more about hydration in a bit, I just wanted to highlight how important water is.

So how much of each of the macronutrients should our children be consuming? Well this is answered through the Acceptable Macronutrient Distribution Range, or AMDR. The AMDR's tell us how many calories your children should consume from each of the macronutrients. It is important to emphasize here that 1 gram of fat is equivalent to 9 calories, while 1 gram of protein or carbs are equivalent to 4 calories. So one 1 gram of fat is more than twice the amount of calories of 1 gram of protein or 1 gram of carbohydrates.

Children ages 1-3 should get 30-40% of their calories from fat, 45-65% from carbohydrates, and 5-20% from protein. Children ages 4-18 should get 25-35% of calories from fat, 45-65% from carbohydrates, and 10-30% from protein.[1]

In order to find how many calories your child will need, here are two formulas to figure it out.

- **Men**: 88.362 + (13.397 × weight in kg) + (4.799 × height in cm) - (5.677 × age in years)
- **Women**: 447.593 + (9.247 × weight in kg) + (3.098 × height in cm) - (4.330 × age in years)

So lets say you have a son who is 10 years old, weighs 60 pounds and is 55 inches tall. Your son would need around 1,067 calories at rest, not including any physical activity they do. In order to incorporate physical activity, you would need to multiply the 1,067 calories by your child's activity level. Lets say your son is active, so his physical activity coefficient is going to be 1.26. So lets multiply 1,067 by 1.26 to get 1,344 calories. Lets round to 1,350 for the sake of the math.

The AMDR's tell us that our son needs (about) 405 calories from fat, 336 calories from protein, and 608 calories from carbs. That breaks down into 45 grams of fat, 84 grams of protein, and 152 grams of carbs.

Do not worry, I will send you home with a copy of the equations and energy equivalents.

Alright, PROTEIN!

What does it do? Why do we need it? Where should we get it from?

Protein is used to build our body. Our muscles and organs are built from proteins. We use protein for all our internal processes as well as to get up and move around.

Some pretty common signs of protein deficiency are weakness/fatigue, slow healing from injuries, and unhealthy hair, skin, and/or nails.

When we eat protein, we are eating them for their amino acid content. Protein can come from animal/fish sources or from plant sources like nuts and legumes. Animal and fish sources are always going to contain all the amino acids our body needs, while plant sources will have to be combined in order to obtain all the essential amino acids.

Gluten-free foods often have a low protein content, so it is important to ensure your children are getting the proper amount.[2] Infants need .55g per lbs. of body weight per day, toddlers need .5 g per lbs., ages 4-13 need .45g per lbs., and ages 14-18 need .4g per lbs.[3]

Remember, consuming animal sources, especially red meat, puts us in danger of consuming saturated, or bad fat.

Which brings us to the next macronutrient, FATS

Fat helps us store energy and keep our body warm, as well as protects our cells and internal organs. Fat also aids in storing and absorbing vitamins A, D, E, and K.

Some signs that your kid needs more fats are dry skin or hair as well as fatigue/lack of energy.

There are 3 types of dietary fats we consume, unsaturated, saturated, and trans fats. Unsaturated fats, which are the healthy fats that we want, can further be broken down into polyunsaturated

and monounsaturated. Unsaturated fats are liquid at room temp while saturated fats are solid. The liquid fats stay liquid when you eat them and essentially flow through your arteries while the solid fats will solidify and get stuck in your arteries. Saturated, or solid fats, are the fats that increase bad cholesterol and lead to plaque buildup. Trans fats are man-made fats and should be avoided.

Typically, gluten free diets are higher in fat.[2] As we know, 1 gram of fat is equivalent to 9 cal compared to 4 cal for carbs and protein. This increased fat intake has the chance to cause your child to gain weight.[2]

Now lets move onto CARBOHYDRATES.

We primarily use carbohydrates for energy. We need carbohydrates to have the energy to perform everyday activities. Our brain can only use carbohydrates as fuel, not proteins or fats. All people of all ages need a minimum of 130 grams of carbohydrates per day to meet the need of our brain. Fiber is also a type of carbohydrates which helps with digestion.

Some signs of low carbohydrate intake are brain fogginess, fatigue/lack of energy, and constipation (specifically fiber).

Just like with fats there are different types of carbohydrates. These are simple and complex carbohydrates. Simple can be found in fruits as well as processed foods. Complex carbohydrates come from whole grains like oats as well as starches.

When we eat a simple carbohydrate like table sugar, it breaks down immediately and so we get the energy from it immediately. This is why kids can get a "sugar rush" from too much candy. When we eat a complex carbohydrate, it takes longer to break down and releases energy over time, so we get a steady amount of usable energy. Fiber is a type of complex carbohydrate

Children 1-3 need 19 grams of fiber per day, ages 4-8 need 25g per day, males 9-13 need 31g, males 14+ need 38 grams. Females 9-18 need 26g per day.[1]

A good amount of research has found that gluten free diets are often high in simple carbs and low in complex carbs. Fruits and vegetables are good sources of complex carbohydrates as well as fiber. It is important to ensure your child reaches an adequate amount of fiber every day.

Micronutrients

Micronutrients consist of our vitamins and minerals that are also important for our growth, and boy are there a lot of them. While they seem small, they are just as important to learn about as our macronutrients are.

Micronutrient deficiency is very common in people diagnosed with Celiacs. The most common deficiencies people with celiac disease are Vitamin B12, Iron, Folic acid(B9), Vitamin D, and Calcium.[4] There will be more information on this in the handout you each will receive, but we will still discuss them as a group.

First, we'll start with Vitamin B12. This vitamin is important for nerve functioning and turning food into energy. Animal products, such as meat, dairy, and fish are good sources of Vitamin B12.

Iron is important for red blood cell formation, transporting oxygen through the body, and some hormone creations. Heme iron specifically is the type in foods that is readily absorbed by the body. You can mainly find this in fish and meats.[4]

For the mothers in the room, you may remember the importance of folic acid during pregnancy. This is a very important micronutrient for development. Folic acid aids in the production of DNA and RNA, as well as the repair of all the cells in our body. You can find this in broccoli and leafy greens.

We always hear about getting Vitamin D from the sun, but you can also receive it from your foods. As we have lots of little ones in here with growing bodies, we want to make sure they grow up to be big and strong, as this vitamin aids in bone density.[4] You can find Vitamin D in fish, salmon, and egg yolks.

Calcium is also important for the strong bones we want to build. You can get this from milk, seeds, and cheese.

While these are not the only micronutrients that can be deficient, these are some of the main ones to definitely keep an eye on.

Handout

https://www.healthychildren.org/English/healthy-living/nutrition/Pages/Gluten-Free-Shopping-Tips-for-Parents.aspx

Here is a detailed handout on micronutrients for you guys to take home on. It outlines key sources of essential vitamins and minerals that your child may be lacking. In addition to what we've discussed this handout includes other important nutrients that children may be deficient in like magnesium and zinc. All the foods on the handout are gluten free and safe for your kids to eat. This handout aims to ensure your children are meeting their micronutrient needs through natural sources and not supplementation.

Recipe

https://www.delish.com/cooking/recipe-ideas/a23014857/classic-stuffed-peppers-recipe/

Here is a great gluten free recipe for you guys to make at home. This recipe focuses on high-quality protein and carbohydrates. This recipe has a high Vit b12, folate, and calcium content, with a modest amount of iron. This recipe is however low in vitamin D, so you may need to get that through another source. Overall this recipe is both delicious and nutritious and offers a complete meal good for maintaining energy and health.

Outro

Alright guys that is all I have for you today. I want to thank you for your time, and I hope I was able to assist you on your journey.

Ill stick around if you guys have any questions. Feel free to email me any questions you may think of at williamgrace@kings.edu

Sources:

1. National Academies of Sciences E, Division H and M, Board F and N, et al. *Dietary Reference Intakes Summary Tables*. National Academies Press (US); 2019. https://www.ncbi.nlm.nih.gov/books/NBK545442/
2. Abdi F, Zuberi S, Blom JJ, Armstrong D, Pinto-Sanchez MI. Nutritional Considerations in Celiac Disease and Non-Celiac Gluten/Wheat Sensitivity. *Nutrients*. 2023;15(6):1475. doi:https://doi.org/10.3390/nu15061475
3. Hudson JL, Baum JI, Diaz EC, Børsheim E. Dietary Protein Requirements in Children: Methods for Consideration. *Nutrients*. 2021;13(5):1554. doi:https://doi.org/10.3390/nu13051554
4. Rondanelli, Faliva, Gasparri, et al. Micronutrients Dietary Supplementation Advices for Celiac Patients on Long-Term Gluten-Free Diet with Good Compliance: A Review. *Medicina*. 2019;55(7):337. doi:https://doi.org/10.3390/medicina55070337

Handouts:

Gluten-Free Shopping Tips for Parents. HealthyChildren.org. https://www.healthychildren.org/English/healthy-living/nutrition/Pages/Gluten-Free-Shopping-Tips-for-Parents.aspx

Recipes:

Rian Handler. Classic Stuffed Peppers. Delish. Published September 27, 2018. https://www.delish.com/cooking/recipe-ideas/a23014857/classic-stuffed-peppers-recipe/