

**EARN 1 CEU**

**EXCLUSIVE WEBINAR PRESENTATION**  
**NUTRITION MANAGEMENT OF ADHD**



**LearningLibrary**  
TODAY'S DIETITIAN

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Disclosure



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Objectives

Participants will be able to...

- Explain the etiology of ADHD as it relates to nutrition interventions
- List 2 nutrients that may be recommended for supplementation
- Explain how nutrition-related research for children with ADHD is conducted

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### Diagnosis

No single test used to diagnose

#### American Psychiatry Association DSM-5 criteria<sup>1</sup>

- ▶ Symptoms by age 12, present for 6+ months
- ▶ Occur in 2+ settings
- ▶ **Inattention, hyperactivity, and impulsivity**
- ▶ Interferes with functioning and development

1. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders

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### Diagnosis

*What is the difference between ADHD and ADD?*



#### American Psychiatry Association DSM-5 criteria<sup>1</sup>

- ▶ Combined
- ▶ Inattentive
- ▶ Hyperactive and impulsive

1. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders

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### Hallmarks

- Impulsivity
- Inattentiveness
- Hyperactive



- Creative
- Innovative
- Imaginative
- Often super intelligent




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**Faces of ADHD**

Michael Phelps - Olympic Swimmer

- ▶ Used swimming to help him focus

Richard Branson - Entrepreneur, billionaire

- ▶ Innovative, always using his imagination

Walt Disney

- ▶ Creative genius - surrounded himself by others to work out the details

Justin Timberlake

- ▶ Musical genius




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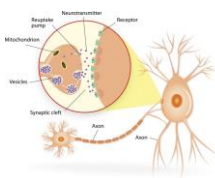
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**Etiology**

Widely accepted theory

- ▶ Altered neurotransmitter activity
- ▶ Not enough of dopamine or serotonin to control behaviors

Genetics



Waring ME, Lapane KL. NeuroImage. 2007;34:1182-1190.

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**Etiology**

Serotonin regulates brain activity

- ▶ Executive function
- ▶ Impulsivity
- ▶ Sensory gating - ability to filter out unnecessary external stimuli
- ▶ Social behavior



People with ADHD and similar disorders have decreased serotonin activity

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### Co-morbidities

2007 National Survey of Children's Health (parent reports)

- ▶ Learning disabilities 46%
- ▶ Conduct disorder 27%
- ▶ Anxiety 18%
- ▶ Depression 14%
- ▶ Speech problems 12%



Presence of comorbid disorders can affect the presentation, diagnosis, prognosis, and treatment of ADHD

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### Prevalence - ages 4-17

National Survey of Children's Health  
2003-2004: 9%

2011: 11%



More than twice as prevalent in boys than girls

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### Therapy

Medications

- ▶ Methylphenidate or amphetamine-containing medications
- ▶ Stimulants that act on dopamine receptors in the brain to increase available dopamine and neuronal activity



Behavioral

Nutritional

- ▶ Secondary interventions or primary therapy?



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### Nutrition Considerations

Anthropometrics

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### Anthropometrics - Height

Medication use can slow growth in height by 1 cm per year for the 1<sup>st</sup> 3 years of use

*This is about 1 inch*

Rebound growth may be possible if medications stopped

Due to the disease itself or the medication?



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### Anthropometrics - Weight

#### Obesity

#### Prior to treatment

- ▶ 1.5 x more likely to be overweight/obese
- ▶ Impulsive in many aspects of lifestyle, including eating
- ▶ Choose the immediate and easy foods

#### Prevention/management:

- ▶ Behavioral therapy for food-related behaviors
- ▶ Plan ahead for improved nutrient content of foods



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## Anthropometrics - Weight

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### Underweight

#### After Starting Medication Therapy

- ▶ Stimulant medications reduce appetite
- ▶ Children started on these medications have a 1.6 chance of being underweight

#### Prevention/Management:

- ▶ Behavioral therapy for food-related behaviors
- ▶ Plan ahead for improved nutrient content of foods
- ▶ Adjustment of medication dose and schedule




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## Nutrition Considerations

Individual Nutrients

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## Nutrition Research for ADHD

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No standardized questionnaire

Perception of behavior

Hawthorne effect?

Structured interviews of parents




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### Sugar

Academy of Nutrition and Dietetics 2012 position statement:

- ▶ The use of nutritive and non-nutritive sweeteners does not affect behavior of children with or without ADHD

American Academy of Children and Adolescent Psychiatry:

- ▶ Does not address any dietary treatments for children with ADHD



#### Practice Tips

Encourage reduced intake of simple carbohydrates and sugars  
 Increase whole grains and complex carbohydrates

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### Artificial Food Colorings and Food Preservatives

1970s Kaiser Permanente Diet aka Feingold Diet

Follow up studies conflicting



#### Practice Tips

RDNs discuss pros and cons with parents  
 Behavioral management and other nutrition interventions

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### Vitamin D

Deficiency common

Supplementation has been shown to improve inattention, hyperactivity, and impulsivity



#### Food Sources of Vitamin D

Fatty fish - tuna, mackerel, salmon  
 Vitamin D fortified foods - dairy products, orange juice, soy milk, cereals  
 Beef liver, egg yolks

#### Practice Tips

Check with physician 1<sup>st</sup>!  
 Supplement 4,000 IU/day IF deficient

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### Omega 3 Polyunsaturated Fatty Acids

One of the most studied nutrients related to ADHD

Decreased plasma levels in ADHD children

Supplementation studies show conflicting results

- ▶ Different dosages
- ▶ Differing content of EPA and/or DHA




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### Omega 3 Polyunsaturated Fatty Acids

2012

Pregnant women with omega-3 rich diet less likely to have a child with ADHD-behavior

2012 Cochrane Review

- ▶ Little evidence exists that supplementation improves symptoms
- ▶ Limited data that combination Omega 3 + Omega 6 supplementation improves symptoms




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### Omega 3 Polyunsaturated Fatty Acids

2014

Omega 3 supplement + methylphenidate increased benefit over methylphenidate alone

2015

Possibly need a supplement with both EPA and DHA

- ▶ Most promising: 650 mg DHA and 650 mg EPA fortified margarine

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### Omega 3 Polyunsaturated Fatty Acids

Study	Doses	Study Length
Belanger et al, 2009 <sup>9</sup>	500 - 1000 mg EPA and 100-400 mg DHA depending on the child's weight	16 weeks
Bos et al, 2015 <sup>10</sup>	Fortified margarine with 650 mg EPA and 650 mg DHA	16 weeks
Stevens et al, 2003 <sup>10</sup>	480 mg DHA and 80 mg EPA	17 weeks
Richardson & Montgomery, 2005 <sup>11</sup>	558 mg EPA, 174 mg DHA	26 weeks
Sinn & Bryan, 2007 <sup>12</sup> ; Sinn et al, 2008 <sup>13</sup>	558 mg EPA, 174 mg DHA	30 weeks
Johnson et al, 2009 <sup>14</sup>	558 mg EPA, 174 mg DHA	26 weeks

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### Omega 3 Polyunsaturated Fatty Acids

EPA regulates serotonin release

DHA regulates serotonin receptor function

Different and complementary actions

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### Omega 3 Polyunsaturated Acids

Treatment effect of Omega 3 much lower than medications

Medication + Omega 3 could reduce dosage of medications needed

**Practice Tips**

- Check with physician 1<sup>st</sup>!
- Supplement IF deficiency confirmed or if diet history confirms low intake
- Supplement both EPA and DHA




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### Exercise

Increases tryptophan transport across blood-brain barrier

Increases serotonin production

Multiple other benefits



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### Behavioral Nutrition Therapy

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### Eating Behaviors of Children with ADHD

Skip meals but eat 5+ times/day

Drink more sugar sweetened beverages

Fewer fruits and vegetables

More screen time, less organized sports time

Lower self-control in eating

Poor meal planning

Convenience foods, immediate choice



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### Behavioral Strategies for Nutrition

'No' means 'no'

Avoid using food as a distraction

Make the healthy choice the easy choice

Avoid using food as a reward

Establish routines and expectations



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### Behavioral Strategies for ADHD

Focus on the positive

Allow for autonomy when possible

Build healthy habits to last a lifetime



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### Summary Recommendations

Avoid simple carbohydrates  
Nutrition therapy +/- medication therapy

Most promising nutrients

Vitamin D

Omega 3 fatty acids

Support elimination diet trial if desired by the family

Behavioral nutrition therapy

Non-food rewards for positive behavior

Exercise



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### Credit Claiming

You must complete a brief evaluation of the program in order to obtain your certificate. The evaluation will be available for 1 year; you do not have to complete it today.

**Credit Claiming Instructions:**

1. Log in to [www.CE.TodaysDietitian.com](http://www.CE.TodaysDietitian.com) and go to "My Courses" and click on the webinar title.
2. Click "Take Course" on the webinar description page.
3. Select "Start/Resume Course" to complete and submit the evaluation.
4. Download and print your certificate.

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