Seminar Content

- Better understanding of the complexity of nutrition and children with special needs
- Talk about how their needs differ and influencing factors such as medications, physical disabilities, behavioral issues
- Some tips on how to improve your child's diet
- Discuss some of the current diets for special needs
Complex Relations with Food

• More than just about eating and about food!
  • Chewing/swallowing difficulties - softer and more processed foods
  • Intense aversions to certain textures, flavors, colors - limiting variety
  • Parent reluctant to clash with their child over food
    • “fighting enough over behavioral issue”
    • “don’t want to remove a source of pleasure for their child”
  • use of food for behavior modification - rewarding with sweet treats
    • Makes sweets more desirable
Causes for Nutritional Concern

- Altered Nutritional Needs
- Behavioral Issues
- Physical Problems

- Influence each other
- Not one direct cause
Altered Nutritional Needs

Assessing Needs - how the differ from regular kids:

1. Growth parameters
   • Growth charts mainly used for kids, BMI, BMI for age
   • Over weight? Obese? Underweight?

2. Caloric Intake
   • Detailed food history or food diary
   • Estimate calorie intake as well as calorie expenditure

3. Nutrient Intake
   • More challenging
   • Look for symptoms
   • Blood tests
   • Food diary and nutrient analysis
Growth Concerns

• One way to evaluate “health” is to look at weight

• Underweight
  • Usually not getting enough calories and nutrients

• Short stature
  • Genetic? Medications? Due to poor nutrition?

• Overweight
  • Excessive calories? Meds? Lack of physical exercise
Specialty Growth Charts

Include:

- Down syndrome
- Turner syndrome
- Williams syndrome
- Spastic quadriplegic CP
- Prader-willi syndrome
- others
What does growth tell us?

- Be careful!!
- Growth is not a measure of health
- Many overweight kids with micronutrient deficiencies
- Similar to healthy range children
Underweight

• Commonly known as Failure to Thrive
• Due to number of reasons
  • Many diseases have higher than normal calorie requirements
  • Malabsorption
  • Increased activity expenditure
  • Poor ability to eat
  • Behavioral issues
• Need to assess:
  • Ability to take in the amount needed
  • Calorie boosting - with help from dietitian
  • Any mechanical/physical issues
  • Possibility of G tube placement
  • Need for supplements?

Cause for Concern
• Not enough calories for proper growth and development
• Micronutrient deficiencies - causing other co-morbidities
• Can effect behavior, mode and bodily functions
Overweight and Obesity
Obesity Rates in Special Needs Children

2010 Study on ages 12-18 with physical, intellectual or behavioral disabilities

- 67.1% with autism spectrum disorder were either overweight or obese.
- 86.2% with Down syndrome were either overweight or obese.
- 18.8% with cerebral palsy were either overweight or obese.
- 83.1% with spina bifida were either overweight or obese.
- 39.6% with intellectual disability were either overweight or obese.
Likely Reasons for Obesity

- The higher price of healthy foods compared to unhealthy foods
- Increased portion sizes
- Increased availability of processed foods
- Child prefers processed foods
- Increased consumption of sugar-sweetened drinks
- Decreased physical activity
- Increased screen time
- Child "enjoys" food
Non Food Related Reasons for Obesity

1. Poor relationship with food - behavioral issues
2. Barriers to exercise
3. Medications
   - 75% of all children with special needs are on meds
   - Some are associated with weight gain
4. Family Stress
   - Hectic schedules - prepared meals, less time to cook proper meals
   - Financial burdens - cost of healthier foods, cost of treatments
5. Genetic Disorders
   - Prader Willis, Cohen, Carpenter, MOMO, Biedl, Borjeson - associated with obesity
6. Perceived risks
   - Parents don’t want kids to get hurt
   - 65% of 11-16 year olds say parents stop them from doing what they want because they worry too much

7. Social Isolation
   - Have fewer friends
   - Excluded from team sports

8. Screen Time
   - Not just special needs children!
   - Used as a diversion
   - Baby sitter for overstressed parents
Concerns for Obesity in Special Needs Child

- makes movement more difficult and reduces child’s ability to participate
- added stigma for children who are already stigmatized due to their disability.
- more difficult for caretakers to help with daily tasks like bathing and toileting.
- Increases the risk of secondary health problems like type 2 diabetes, asthma, CVD, sleep apnea, some cancers, stroke, arthritis, and gynecological problems.
- Obesity incurs additional health care costs.
1. Start Early.
   • Preventing unhealthy weight is easier than losing it and bad habits can be hard to break.

2. Make Change as a Family.
   • Whole family benefits from a healthy diet, clear limits on screen time and sweets, and regular exercise – including parents and siblings.

3. Portion sizes
   • Use proper portions sizes. No extra foods or seconds.

4. Start Small.
   • Change one thing at a time - 3 days later do another.

5. Mindful eating.
   • Kids overeat if not being mindful. No eating in front of the TV. Eat slowly.

   • Encourage child to have their own health and fitness goals and celebrate when he or she meets them. Achievable goals might include eating vegetable and fruit every day or walking everyday.
Nutrition Needs
Basics of Nutrition - Necessary for life!

• Good eating habits and balanced diet
  • Nutrients required for body functions
  • Energy (calories)
  • Good health
  • Growth and development in children

• Need a balance of macronutrients and micronutrients
  • Macronutrients
    • Carbohydrates, Proteins and Fats
  • Micronutrients
    • Vitamins, Minerals, Trace Elements, Fibers
  • Water!!!
Macronutrients

Carbohydrates
For ENERGY
- All carbohydrates break down into a glucose molecule
- Simple vs complex
- Can affect mood and behavior
- Sugar cycle
- Need a variety of complex carbohydrates
- Also contain vitamins and minerals

Protein
For Muscle Building and Growth
- Also needed for
  - Immune system
  - Protein receptors
  - Hormones and Enzymes
  - Transporters
  - Skin repair
- Meds can increase needs
- Some illness cause increase needs

FAT
For ENERGY and BRAIN DEVELOPMENT
- Eye development
- Skin and hair growth
- Insulation/body temperature
- Fat soluble vitamins ADEK
- Omega 3 fats
  - Good fats
  - Anti inflammatory
  - Improve mood balance
# Micronutrients

## Vitamins and Minerals

**For GROWTH AND DEVELOPMENT**
- B Vitamins - brain fx and mood
- Calcium, vit D, Mag and Phosphorus - bone/teeth
- Skin repair - vit A, selenium, zinc and vitamin C
- Iron, folate, B vitamins - oxygen carrying
- Iodine - thyroid function
- Antioxidant action
  - Free radicals in our bodies that cause damage
  - Antioxidants bind to them

## Fiber

**For good intestinal health**
- Soluble and Insoluble fiber
- Helps relieve constipation
- Keeps bowels regular
- Improves digestion
- Aids in developing good bacteria
- Found in whole grains, fruits and vegetables

## Water

**For LIFE**
- Body is over 60% water
- Dehydration impairs every bodily function
  - Reduced concentration, memory
  - Alters mood and behavior
  - Confusion and slow reaction
  - Lethargic and no energy
  - Decreases athletic performance
  - Impairs heart function and all organ systems
  - Adds stress to the body
- Most kids are not drinking enough
Nutritional Needs

• Important to know your child's needs
• May be different from another child with the same syndrome/disease
• Diet must be individualized depending on:
  • Energy requirements
  • Any special needs - nutrients, protein
  • Activity
  • Mechanical issues
  • Behavioral issues

Cystic Fibrosis - fat soluble vitamins, pancreatic enzymes, extra calories, may require reduced CHO
Autism - increased B vitamins, complex CHO and protein
EB - skin repair - increase protein, Zn, Vit A, Vit C, Fe
Cerebral Palsy - spastic movement - increased energy, protein
Behavioral Issues in Special Needs Children
Special Needs Kids tend to have Behavioral Issues

• Picky eating behaviors - eating preferences
  • Preference for certain foods, colors, brands,
• Difficulty with transitioning to age-appropriate diet
  • Texture issues
• Increased sensory sensitivity
  • More sensitive to smells, temperatures, light
• Short attention span
• Limited variety in diet
  • Stick to “safe” and familiar foods
• Need for routine
  • Eat at a certain place, at a certain time
Emotional/Overeaters

- Many children “love” food and parents feel bad for denying them one of their pleasures but this leads to a life long battle of obesity and a bad relationship with food

- Eat out of boredom
- Eat when anxious
- Eat to feel happy or when sad
- Develop a complex relationship with foods
How to Improve Selective Eating

• Can be detrimental to health - micronutrient deficiencies
• Can even make disease/disorder worse
  • Tough love attitude!!
  • Don’t become a short order cook - makes the problem worse
  • Make sure to include one food that the child will eat
• Be a good role model - eat the same foods
• Make sure child is hungry
• No juice, milk or snacking between meal/snack times
• No bribing or rewarding with foods

Takes up to 8 times for a child to like a new food
Food Chaining

- McDonalds French Fries
  - different size
  - different brand
  - homemade fries
  - other foods that shape

- mashed potato
  - baked potatoes
  - potato wedges
  - sweat potato fries
  - breaded vegetables
When child refuses to eat family meal

- Set expectations on trying new foods
- Include child in the planning of meals and getting groceries
- Start by adding similar foods to what they are already eating
- Set time limits - 30/40 minutes for meals
- 20 minutes for snacks
- If weight OK - it is ok for child to miss a meal - don’t give in to demands
- With children with severe sensory issues may need more gradual or modified plan
Physical Issues Associated with Special Needs Children
Is it one disorder/disease??

- Allergies
- Asthma
- Sleep disturbances
- Food Sensitivities
- Inflammatory bowel disease
- Epilepsy
- Digestive Disorders
- Feeding Disorders
- Persistent Viral Infections
- And more

NO!!!
Physical Issues found in Special Needs Population

• Higher rate of comorbidities
  1. Gastrointestinal Problems
     • GERD
     • Celiac disease
     • Irritable bowel
     • Inflammatory bowel
     • Ileo-colonic lymphoid nodular hyperplasia (LNH)
     • Poor Intestinal flora
        • constipation
        • Diarrhea
     • Leaky Gut or increased gut permeability
     • Nutrient malabsorption
     • Autistic enterocolitis
Physical Issues found in Special Needs Population

2. Food allergies and intolerance
   • Usually exhibit GI distress
   • Maybe rashes/eczema
   • Wheezing/congestion

3. Higher risk for Endocrine/Thyroid Issues
   • Increased risk of diabetes
   • hypothyroidism

4. Mechanical issues
   • Structural issues
   • Inability to swallow - dysphagia
   • Less muscular tone
   • Dental issues/chewing issues
   • Salivation problems
Signs of a mechanical feeding problem:

• Choking or gagging when feeding
• Having chronic respiratory problems or repeated pneumonias
• Excessive spitting up or vomiting
• Requiring a long time to feed
• An infant becoming exhausted or excessively sweaty when feeding
• Eating small amount during feedings
• Having a poor appetite or not indicating when they are hungry
• Not progressing to baby foods, finger foods and table foods at expected ages or refusing to accept a variety of foods
• Poor growth
Drug-nutrient Interactions

• Medications may increase or decrease appetite
• may affect vitamin/mineral absorption
  • Ritalin decreases appetite and stunts growth
  • Risperdal, a SSRI, may increase appetite
  • Seizure meds affect calcium, vitamin D and folate metabolism and may need to be supplemented
  • Most drugs impact gut flora
  • Steroids increase protein requirements, increase appetite
• Important to know what these drugs CAN do
  • Not all drugs have the same effect on every person
Dietary Interventions

For Special Needs Children
Yes, it's sugar-free, low-fat, non-dairy, peanut free, gluten free, no msg, no trans fats, low carb, non GMO, organic, vegan, low calorie, no fructose, and it tastes like crap too.
| BIOMEDICAL/ | Parent Ratings | Got | No | Got:Better | Worse | No. of Cases |
| SUPPLEMENTS | | Worsed | Effect | Better | Worse | |
| Calcium | 3% | 62% | 35% | 14:1 | 2397 |
| Cod Liver Oil | 4% | 45% | 51% | 13:1 | 1681 |
| Cod Liver Oil with Bethaneol | 10% | 54% | 37% | 3:8 | 126 |
| Colostrum | 6% | 56% | 38% | 6:1 | 397 |
| Detox. (Chelation)C | 3% | 23% | 74% | 24:1 | 803 |
| Digestive Enzymes | 3% | 39% | 58% | 17:1 | 1502 |
| DMC | 8% | 51% | 42% | 5:4 | 5907 |
| Fatty Acids | 2% | 41% | 56% | 24:1 | 1189 |
| 5 HTP | 13% | 47% | 40% | 3:1 | 343 |
| Folic Acid | 4% | 53% | 43% | 11:1 | 1955 |
| Food Allergy Treatment | 3% | 33% | 64% | 24:1 | 952 |
| Hyperbaric Oxygen Therapy | 5% | 34% | 60% | 12:1 | 134 |
| Magnesium | 6% | 63% | 29% | 4:1 | 301 |
| Melatonin | 8% | 27% | 65% | 7:8 | 1105 |
| Methyl B12 (nasal) | 15% | 28% | 56% | 3:9 | 48 |
| Methyl B12 (subcut.) | 7% | 26% | 67% | 9:5 | 170 |
| MT Promoter | 13% | 49% | 38% | 2:8 | 61 |
| P5P (Vit. B6) | 12% | 37% | 51% | 4:2 | 328 |
| Pectin | 12% | 59% | 30% | 2:6 | 164 |
| SAMe | 16% | 63% | 21% | 0:9 | 142 |
| St. Johns Wort | 18% | 66% | 16% | 0:9 | 150 |
| TMG | 15% | 43% | 42% | 2:8 | 803 |

| BIOMEDICAL/ | Parent Ratings | Got | No | Got:Better | Worse | No. of Cases |
| SUPPLEMENTS | | Worsed | Effect | Better | Worse | |
| Transfer Factor | 10% | 48% | 42% | 4:3 | 174 |
| Vitamin A | 4% | 52% | 43% | 10:1 | 927 |
| Vitamin B6 | 4% | 48% | 48% | 11:1 | 6634 |
| Vit. B12 (oral) | 7% | 32% | 61% | 8:6 | 98 |
| Vitamin C | 2% | 55% | 43% | 19:1 | 2397 |
| Zinc | 2% | 47% | 51% | 22:1 | 1989 |

### SPECIAL DIETS

- Candida Diet 3% | 41% | 56% | 19:1 | 941
- Feingold Diet 2% | 42% | 50% | 25:1 | 899
- Gluten-/Casein-Free Diet 3% | 31% | 66% | 19:1 | 2561
- Removed Chocolate 2% | 47% | 51% | 28:1 | 2021
- Removed Eggs 2% | 56% | 41% | 17:1 | 1386
- Removed Milk Products/Dairy 2% | 46% | 52% | 32:1 | 6380
- Removed Sugar 2% | 48% | 50% | 25:1 | 4187
- Removed Wheat 2% | 47% | 51% | 28:1 | 3774
- Rotation Diet 2% | 46% | 51% | 21:1 | 938
- Specific Carbohydrate Diet 7% | 24% | 69% | 10:1 | 278
**Types of dietary intervention?**

**Numerous!** Including (individually or combinations of):

- Gluten Free/Casein Free
- Feingold Diet
- Ketogenic Diet
- SCD (Complex carbohydrates / starches / processed sugars)
- Yeast Free/Sugar Free diet
- And various dietary supplements (ω-3 oils, vitamins).
**Gluten and Casein Free Diet**

*What is gluten?*
- A mixture of two proteins, *gliadin* & *glutenin* that give flour a cohesive, elastic property to turn into dough.
- Present in: wheat, barley & rye (oats <20%).

*What is casein?*
- Primary protein found in mammalian dairy sources.
- Several variants according to order / species*.
- Present in: milk, cheese & yogurts.

*These tend to be the most hyper allergenic foods*
Gluten-Free, Casein-Free Diet - Theory

Leaky Gut syndrome

Casein and gluten cross through intestine wall

Enter into spinal fluid
Act like opiates

Effects CNS behavior

Resulting in Autism

Effects on CNS behavior resulting in Autism
Initial Trials

Improvements reported in several areas:
Social interaction
Language use / comprehension
Sensory / motor abilities
after 4 years - improvements continued

research trials - the behavioural effects of dietary intervention include:
Attention & concentration
Communication & language
Social integration
Motor co-ordination
Self-injurious behaviours
• **not universally successful**.
• results suggested that the **younger, more severely affected children were best responders**.
• *Parents tended to be more pleased* with the results than teachers.
• Increased risk of **nutrient deficiencies**
  • wheat products are high in B vitamins, iron and zinc
  • dairy - Calcium, vitamin D, phosphorus, protein, vitamin b12
• **Very difficult** to stick to - especially for picky or selective eaters
Feingold Diet

- Developed by Dr. Fiengold in 70s
- Link between additives and hyperactivity
- No artificial colors, dyes, sweeteners and preservatives
- No salicylates -
  - Found in healthy foods
  - Are made by plants to protect themselves
  - Some people are sensitive to them
- Improved behavior and attention span
- But not universal
Ketogenic Diet

- High fat and protein and minimal carbohydrate (around for 80+ years)
- Send body into ketosis and uses ketones for energy and not glucose
- Seizure control in myoclonic epilepsy (1/3 become seizure free)
- Theory is less glucose to cause hyperactivity
- Very hard diet to follow
- Need to be followed by specialist
- Will need supplementation
- Can strain the body (especially liver and kidneys)
Specific Carbohydrate Diet/SCD Diet

• Theory is to balance of microbes in GI tract
• “heal the gut”
  • No sugar, cooking oil, processed foods, starches or corn syrups
  • No wheat, pasta and breakfast cereals
  • Most commercial dairy products
• Allowed
  • Beans, eggs, fish and fresh meats
  • Fresh fruits and vegetables, nuts and legumes
  • Small amount of natural honey

• Hard to follow and restrictive
• May need nutrition supplementation

For treatment of Crohns, Ulcerative Colitis and IBS (common digestive problems in special needs children)
Yeast Free and Sugar Free

• Good bacteria and bad bacteria in your body
• When bad bacteria increase, good bacteria decreases
• Yeast/Candida over growth
• Chronic yeast infections,
  • bloating,
  • psychiatric symptoms have been found when there is an overgrowth of yeast in GI Tract
• If yeast free - have to be sugar free as well
• Usually also recommend going gluten free
Others

- GAPS diet - more restrictive than the SCD diet
- Body Ecology Diet - probiotic foods, less sugar
- Raw Food Diet - only eating raw and uncooked foods
- Whole Food Diet - more natural diet, nothing processed in any way
- Select alternative therapy - be aware of possible toxicity
  - Vitamin B6 and magnesium supplement
  - DMG
  - Antioxidants
  - Zinc
  - Coenzyme Q10
  - Beta Glucan

Nothing has been proven effective
Supplements to Consider  Omega-3 Fatty Acids

• Omega-3 Fatty Acids
  • inhibit the body's inflammatory response
  • may help reduce childhood asthma, heart disease and rheumatoid arthritis
  • important in infant brain development
  • recent reports of altered FA metabolism in boys with ADHD
  • Found in fatty fish, walnuts, flax seeds, soybeans, canola and flaxseed oils

Recommended DHA/EPA Combined

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<tr>
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<td>Adults</td>
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Which one is right for you child?

• Unfortunately ... I don’t know!
• As none have a high success rate it is trial and error
• Some work for some kids while none of them improves symptoms in some children
• Work with a dietitian to determine
  • Review symptoms (gassiness, bloating, diarrhea, constipation, infections)
  • Diet history or food journal with rating of symptoms should be kept
Summary of Changes that can be made:

• Avoid food wars. Keep your healthy food efforts fun and friendly.
• Keep mealtimes pleasant and free from distractions like TV.
• Model good eating habits.
• Don’t use food for rewards or punishment.
• Learn appropriate serving sizes for your child’s age.
• Serve vegetables and fruits raw when possible, as they are more filling.
• If chewing issues, serve soft foods like yogurt, steamed vegetables, pureed fruits.
• Learn to read food labels to understand sugar, fat and sodium content.
• Allow occasional treats so that sweets and junk food don’t become forbidden fruit.
• Offer a variety of foods - it takes many introductions of a food for it to be accepted.

• Make sure to always have one food on the table with which a child feels comfortable.

• If your child usually wants seconds, make the first portion smaller and of veg first.

• Involve kids in planning, shopping and cooking. Also, plan and shop for the week’s meals ahead of time.

• Only eat at the dining room or kitchen table. (No car snacking or walking around snacks or watching TV)
• Don’t drink calories – avoid sweetened drinks.
• Keep junk food and soda out of the house.
• Choose whole grains over refined grains.
• Roast or poach instead of frying.
• Choose cereals and other foods with low or no added sugar.
• Eat at home whenever possible.
• If grazing is a problem, set times when kitchen is closed.
• If your child eats out of boredom, redirect him or her to other pleasant activities.
THANK YOU!
Summary of Survey findings

- High rates of coexisting problems, especially
  - anxiety, sensory difficulties, sleep, eating and behavior problems
- Wide range of interventions in use-
  - no one approach dominant
- Relatively low level of GI and allergy involvement
- High take up and strong interest in biomedical interventions, especially diets
Food Chaining

McDonald’s French Fries > Different sizes > Different brands > Homemade French Fries > Other food items in same shape > Breaded vegetables like zucchini > Sweet potato fries > Tater tots > Potato wedges > Baked potato > Mashed potato

• Consistently try the same variation of the food item for several meals/days before giving up i.e. 15-25 times.
• Once the item is accepted, continue to gradually change accepted items in this format.
• Keep trying! Don’t give up! It will work.
Examples

Behavioral
- Some food aversion/soft foods
- Structural issues with mouth

Nutritional
- 30-50% chance of obesity
- Slightly less calories
- Less fat intake
- 40% chance of obesity
- High risk of nutrient deficiencies
- Leaky Gut syndrome

Physical
- Chewing difficulties/hypothyroid/leptin levels
- Hypothyroidism
- GI symptoms, entercolitis, allergies
CYSTIC FIBROSIS & NUTRITION

- Multifactorial risks for malnutrition
  - Intake
    - Decreased appetite and volume consumed
    - Physical/mechanical/mental inability to meet nutritional needs orally
  - Output
    - Increased energy output to meet cost of breathing and coughing, higher during pulmonary exacerbations.
    - Malabsorption
  - Basic Nutrition Guidelines
    - High calorie diet (moderate fat)
    - Salt repletion, especially with sweating
    - Pancreatic enzymes
    - Fat soluble vitamins in water miscible form (ADEK)
BPD: Bronchopulmonary Dysplasia

• Nutrition Concerns

  • Prenatal undernutrition, premature growth issues
  • Increased caloric intake to maintain normal or catch-up growth
  • Suboptimal intake due to increased effort of breathing during eating and appetite suppressing medications
  • Delayed development of oral feeding skills
Role of the Dietitian in ASD

• Clarify details and purpose of the special diets
• Guide parents to adapt diet to the child’s needs
• Reduce anxiety about implementing special diets
• Suggest acceptable replacement foods
• Suggest cost-effective ways to adapt to the diet
• Help families make dietary changes that also benefit the entire family
• Provide resources for locating special foods
• Problem solve lack of response to uncover hidden exposures
• Keep current on new food products and sources
• Knowledgeable about availability, taste, cooking with special foods.
• Offer ongoing support and encouragement
Need to gather a lot of info to make plan:

• Growth history
• Dietary history
• Medical history
• Diagnosis
• Feeding and developmental information
• Psychosocial and environmental information
• Clinical information and appearance (hair, skin, nails, eyes)
• Other (anthropometrics, laboratory)