Obesity in Adolescence with a focus on activity

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Objectives

- Be aware of emerging research, issues and non-traditional approaches to weight management.
- Recognize current research evaluating the efficacy of leading popular diets and diet approaches for weight management.
- Distinguish between the amount and type of physical activity

BMI Statistics (12-19yrs)

- Underweight: 4%
- Overweight: 14%
- Obese: 18%
  - Hispanic males: 27%
  - African American Females: 26%
  - Houston: 17%
  - Texas: 16%
- Malnourishment can exist whether you are overweight or underweight

NHANES 2007-2008

Teen Eating Trends

95% do not eat enough whole grains

At least 60% eat too much fat and too little fiber

Many use unhealthy methods to lose weight

Dairy consumption has fallen

90% do not eat enough fruits & vegetables

90% do not eat enough calcium (females)

People <18 y/o account for 80% fast food restaurant visits

YRBS 2008 & NHANES 2007-08

What role does the current teen nutrition trends have on weight?

Whole grains increase fullness and are a valuable source of magnesium

Fruits and vegetables are low in calories and add volume to meals

Fat is calorically dense at 9 kcal/gram and increases the energy but not the amount

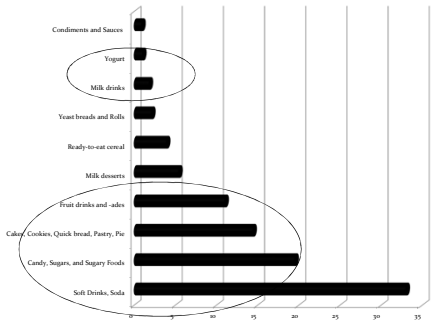
Fast food restaurants do have healthy choices but are often chosen by adults

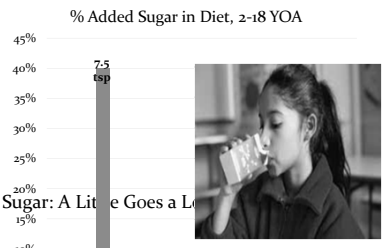
Unhealthy measures to lose weight include fasting, meal skipping, vomiting

Knowledge deficit compounded by the media

Adolescents Get Plenty of…

- Low Quality Calories
- Sugar
- Saturated & Trans Fat
- About 50% of low quality calories are consumed from:
  - Soda, fruit juice, diary desserts, grain desserts (cakes, cookies, donuts, pies, cobblers, chips, granola bars) and pizza





Daily Sugar Intake[7]

Sugar: A Lit e Goes a Lo

NHANES Data from: Dairy Research Institute. NHANES 2007-2010.

In a land of plenty, adolescents need more:

- Calcium
- Vitamin A
- Vitamin B12
- Vitamin C
- Vitamin D
- Vitamin E
- Fiber
- Folate
- Niacin
- Thiamine
- Riboflavin
- Magnesium

Skim, 1% and Whole Cow's Milk

Other Considerations

- Who in household responsible for cooking/shopping?
- Cultural/ethnic eating patterns?
- Levels of activity and inactivity?
- 5 – 3 -2 -1 - 0
  - 5 – svgs fruits & vegetables
  - 3 – meals per day
  - 2 – hours or less of screen time
  - 1 – hour or more physical activity
  - 0 – sugar sweetened beverages

Basics to Assess

- Sweetened beverages
- Skipped meals or "dieting"
- Large portion sizes
- Energy dense foods
- Dietary balance
- Fruits & vegetable intake
- Eating out/fast food
- Snack quality & frequency

LEVELS OF:

- Self efficacy
- Readiness to change
- Social/Family support
- Body Satisfaction

Quick Food Survey

More Often	Sometimes	Less Often
Water	White breads	Cakes/Pies or pastries
Fruits	Flour tortillas	Candy/chocolate
Vegetables/salad greens	White rice	Regular soda
Baked or grilled meats/fish	Cheese	Juice/lemonade/ punch
Nuts/seeds	Beans	Fried foods
Whole wheat breads & crackers		Sugar
Brown Rice		Chips
Milk/Yogurt		Butter

Family Time

Families who dine & exercise together report:

- Healthier eating habits
- More positive relationships
- Closer family bonds
- Better communication

Most Powerful Role Model → **Mother!**

Potential Consequences of Inadequate Nutrition in Youth

- Poor academic performance/Cognitive function
- Psychosocial difficulties
- Poor immunity/resistance to colds
- Dental caries
- Poor physical performance
- Development of chronic diseases
  - Obesity
  - Heart disease
  - Diabetes
  - Osteoporosis

Weight teasing and bullying

Increased with the explosion of technology

Name calling is the most common form

79% of those who were bullied did not tell anyone

50% of those who tell feel like they were not taken seriously

Int Journal Adol Med Health 2014

Dietary Guidelines 2015-2020

- Key recommendations-positive messages
  - Follow a healthy eating pattern across the lifespan
  - Meals are the focus- not nutrients
  - A variety of vegetables
  - Whole fruits
  - Grains, at least half whole grain
  - Low fat dairy
  - Variety of protein foods

Dietary Guidelines

- Key recommendations- foods to limit
  - Limit sugar to less than 10% of calories
  - Less than 10% of calories from saturated fat
  - Less than 2300 mg of sodium
  - Reduce protein for men and boys

Revisions to the food label

Nutrition Facts
Serving Size 2/3 cup (55g)
Servings Per Container About 8

Amount Per Serving
Calories 230 Calories from Fat 72
% Daily Value*
Total Fat 8g 12%
Saturated Fat 1g 5%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 160mg 7%
Total Carbohydrate 37g 12%
Dietary Fiber 4g 16%
Sugars 1g
Protein 3g
Vitamin A 10%
Vitamin C 8%
Calcium 20%
Iron 45%
* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

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Cholesterol 0mg 0%
Sodium 160mg 7%
Total Carbohydrate 37g 13%
Dietary Fiber 4g 14%
Total Sugars 12g
Includes 10g Added Sugars 20%
Protein 3g
Vitamin D 2mcg 10%
Calcium 260mg 20%
Iron 8mg 45%
Potassium 235mg 6%
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

New label will Distinguish between natural and added sugars

Creating the healthy meal-meeting the goal of energy balance

- Importance of the environment and food intake
- Plate size matters
- Children who were allowed to serve then on adult size dinner plates
  - 90 kcal more
  - 104 kcal more when they liked the foods
- Although autonomy is important, families should provide age appropriate dishes

Eating out impact on children and teens

- When children and teens eat away from home the increase in calories is 160 kcal and 297 respectively
- Soda and sweet drink consumption is significantly higher in both groups away from home
- Sodium intake increases by 396 mg
- Consider the magnitude of this increases in small children

Powell, LM JAMA Pediatrics 2013 167:14-20

Benefits of family meals-more than nutrition

- Outside of improved nutritional status family meals are associated with improvement of psychosocial variables.
- Families who eat together have children who are less likely to have the following
  - Disordered eating
  - Alcohol and substance abuse
  - Positive self esteem and school performance
  - Less depression and suicidal thoughts

Harrison, ME, et al Can Fam Physician 2015 61: 96-106

Energy & Protein Needs Based on Height (AAP endorsed)

	Age (yrs)	**Energy (kcal/cm)**	**Protein (gm/cm)**
Males	11-14	15.9	0.29
	15-18	17	0.34
	19-24	16.4	0.33
Females	11-14	14	0.29
	15-18	13.5	0.27
	19-24	13.4	0.28

TCH Pink Book 9th edition Page 21

The Energy Cost of Growth-Body Composition Changes

- Growth during adolescence
  - Increased proportion body fat for females
  - Increased proportion of lean mass and blood volume for males
- Fat free mass (FFM)
  - Increases in males from ~28kg at 10.5 years to ~61kg at 18.5 years
- Fat mass deposition
  - Increases to about 25% in females
  - declines to about 13% in males at 18.5 years
- BMR is strongly correlated with fat free mass

Energy Requirements in Adolescence

Depend on

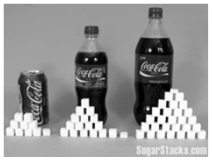
- Basal Metabolism (BMR)- it is higher with more lean mass
- Energy cost of growth
- Energy cost of physical activity- where do you think the average teen falls?
  - Sedentary
  - Moderate
  - Active

What Does This Translate to for Sedentary Adolescents?

Age	**Males** (calories/day)	**Females** (calories/day)
9-13	1600-1800	1500-1700
14-18	2200-2400	1600-1800

How many calories are in a standard fast food burger meal? → **1300!**

Dissecting the fast food meal



But I only had three things! I didn't eat that much!

Becoming fad free

- Red flags of health fraud:
  - Restricts food group
  - Promises quick fix
  - Tries to separate you from your health care provider
  - Claims to be all natural
  - Uses useless, made up jargon
  - If a supplement, money back guarantee

Popular trends-think science

- The use of coconut oil
  - Almost completely saturated fat
  - Contains short chain, medium chain and long chain saturated fat
- Paleo diet
  - Paleo restricts food groups, all junk and sugared beverages
- Vegetarian
- Sports nutrition
  - Plant based, best managed with lacto-ovo options
  - Protein powders, pills

Does the type of protein matter?

- Studies indicate improved muscle protein synthesis with fat free fluid milk and whey protein
- Both mitochondrial (aerobic) and myofibrillar proteins(force production) improve
- Driving factor may be the rich content of BCAA particularly leucine

Nutritional composition of milk

- High biological value- 91
- PDCAAS score of 1.00
- 80% casein BV of 77
- 20% whey BV of 104

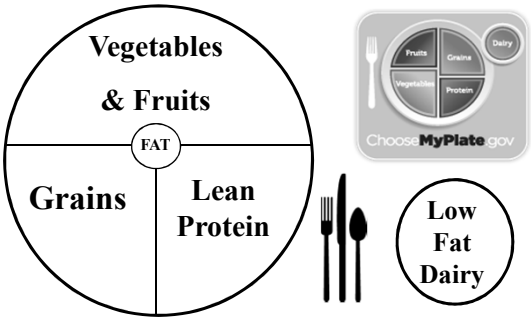
- Protein fortified milks

- Soy has a biological value of 74

Best practices

- Correct the myths
- MD's may be the only health care professional teens may ever see
- Do your parents have evidence or myths?
  - "carbs are bad"
  - "muscle weighs more than fat"
  - "BMI report cards work for all students"
  - "Coconut oil is better than olive oil"
  - "Milk has too many hormones and sugar"

The Plate Method or Choose My Plate



Making better food happen with a busv life

- Do your food prep on the weekends
- Consider "almost homemade"
- Use smoothies as a vehicle for better nutrition
  - Yogurt
  - Frozen fruit
  - Raw spinach

- Prep raw fruits and vegetables before work
  - Serve this when you walk in the door

Physical activity guidelines in pediatrics

WHO recommendations

- Children and youth aged 5–17 should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily.
- Amounts of physical activity greater than 60 =greater benefits
- Most of the daily physical activity should be aerobic. Strength building 3 X week

American Academy of Pediatrics

- At least 60 minutes of moderate to vigorous activity
- Reduce sedentary time
- Bone and muscle strengthening exercise

Are children & teens meeting exercise targets

- United States 2014 Physical Activity Report Card
- The grade is a D-
- Only 24.8% of 5-17 year old get 60 min of moderate/vigorous PA
- Girls have the biggest drop of in PA with 24% of 11 year olds getting 60 minutes dropping to 17% of 15 year olds
- Limiting sedentary behaviors with 16-19 year olds being sedentary for 8 hours per day

When Should We Supplement?

- Not required for healthy adolescents who eat variety of foods
- Whole foods always better than fortified
- Consider a supplement when an adolescent:
  - Is a picky eater
  - Skips meals
  - Avoids whole food group
  - Has a repetitive diet
  - Deficiency per serum levels

To Gain or Lose Weight

- Add 250-500 kcal/day to gain ½-1 pound per week
- Omit or burn 250-500 kcal/day to lose ½-1 pound per week
- Exercise/ movement at least 60 minutes
- Risk of inadequate nutrient intake
  - <1300 kcal/day for females and 1600 for males

Why "Dieting" Usually Doesn't Work

- Under-eating interferes with body processes that signal hunger, fullness, and metabolism
- Creates a "deprivation" mentality
- 95% of dieters regain weight
- "Diets" actually contribute to eating problems
- Low glycemic diets- whole grains, vegetables and low fat dairy
- Mediterranean diet

Steps for Success

- Be aware of what you eat
  - Pay attention to portion sizes
  - Try not to eat emotionally
- Do not skip meals & snacks
- Eat plenty of fruits, vegetables, whole grains, low-fat dairy foods
- Limit fats, salt, and sugar
- Be physically active every day
  - Strive to maintain a healthy weight

VARIETY * BALANCE * MODERATION

"Tech" Self Monitoring

Websites

- www.choosemyplate.gov
- www.myfitnesspal.com
- www.calorie-count.com
- www.thedailyplate.com
- www.sparkpeople.com
- www.fitday.com
- www.nutritiondata.com

Phone Apps

- Lose It!
- Myfitness Pal
- Figure Facts Teens
- Fooducate
- Calorie Count
- Food a pedia
- Smash your Food
- Fast Food Calorie Counter
- Map my run
- Garmin fit
- Nike training
- Steps Counter
- Live Strong Calorie Counter

Resources

- Kidseatright.org
- Choosemyplate.gov
- Healthierus.gov
- Girlshealth.gov/nutrition
- Kidshealth.org
- Nutrition.gov/life-stages/adolescents/tweens-and-teens
- Health.gov/PAguidelines
- Nhlbi.nih.gov/health
- Win.niddk.nih.gov
- Fnic.nal.usda.gov
- Eatright.org
- Iom.edu
- Mayoclinic.com

Questions?

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