Fat Chance for Obesity Medicine Education in Medical Schools

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Objectives

• Recognize Obesity Bias and Stigma in Health Professions

• Discuss current and future obesity trends in the US

• Identify current state of obesity education in US

• Discuss obesity education in US Medical schools

• Discuss future opportunities for obesity education
“Persons who are naturally fat are more apt to die earlier than those who are slender”

- Hippocrates
Weight Bias in Health Care

• Perceptions of Patients Affected by Obesity
  • 69% of patients experienced weight stigma from doctors
  • BMI > 55: 68% report delayed seeking health care because of their weight due to disrespectful treatment, embarrassment, inadequate gowns, equipment and chairs.

Weight Bias in Health Care

• How do Health Care Providers feel?
  • > 50% of physicians view patients with obesity as “awkward, unattractive, ugly, non-compliant.”
  • 60% state that “lack of motivation” is the cause of obesity.
  • Physicians feel “eating too much” is the most important risk factor, ranked above genetics and environment.

Weight Bias – Students in Health Professions

• Witnessed derogatory humor regarding patients with obesity
  • 63% by peers
  • 65% by healthcare providers
  • 40% by instructors

-Puhl 2014
Weight Bias – Students in Health Professions

• Evaluation of weight bias in 3\textsuperscript{rd} year students
• Weight Implicit Association Test
  • 33\% explicit bias
  • 39\% implicit bias
  • 67\% were unaware of their negative attitudes

-Miller 2013
Weight Bias – Students in Health Professions

• Student Perceptions of Patients with Obesity
  • 33% lack motivation for change
  • 36% non-compliant with treatment
  • 36% of students felt frustrated by these perceptions
  • Students with higher weight bias expressed greater frustration

-Puhl 2014
Weight Bias – Students in Health Professions

• Effects of Obesity Education on Student Bias
  • Touro University College of Osteopathic Medicine - CA
    • Initiated obesity content in curriculum in 2011
    • Evaluated student bias toward obesity during all 4 years
    • Compared students enrolled before obesity curriculum was initiated to students who completed the curriculum
    • 1st-year students who received obesity education had a significant reduction in bias
    • Reduction was sustained over all 4 years

-Gayer 2018
Obesity Trends* Among U.S. Adults  1990

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults 1995

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults  2000

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults 2005

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults 2010

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults 2016
Pediatric Obesity Rates

Figure 1. Trends in obesity among children and adolescents: United States, 1963–2008

1963-2012 (NHANES)

NOTE: Obesity is defined as body mass index (BMI) greater than or equal to sex- and age-specific 95th percentile from the 2000 CDC Growth Charts.

# Pediatric Obesity Rates - Trends

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>2-5 years</td>
<td>&lt; 5%</td>
<td>7.2%</td>
<td>13.9%</td>
<td>9.4%</td>
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<tr>
<td>6-11 years</td>
<td>4.2%</td>
<td>11.3%</td>
<td>19.6%</td>
<td>17.4%*</td>
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<tr>
<td>12-19 years</td>
<td>4.6%</td>
<td>10.5%</td>
<td>18.8%</td>
<td>20.6%*</td>
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<tr>
<td>2-19 years</td>
<td>&lt; 5%</td>
<td>10%</td>
<td>17.1%</td>
<td>17.2%*</td>
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</table>

*Difference from 2003-04 to 2013-14 not statistically significant

Ogden, JAMA 2016
## Pediatric Obesity Rates - Race

<table>
<thead>
<tr>
<th>Age</th>
<th>NHW</th>
<th>NHB</th>
<th>Hispanics</th>
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<tbody>
<tr>
<td>2-5 years</td>
<td>5.2%</td>
<td>10.4%</td>
<td>15.6%</td>
</tr>
<tr>
<td>6-11 years</td>
<td>13.6%</td>
<td>21.4%</td>
<td>25.0%</td>
</tr>
<tr>
<td>12-19 years</td>
<td>19.6%</td>
<td>22.6%</td>
<td>22.8%</td>
</tr>
<tr>
<td>2-19 years</td>
<td>14.7%</td>
<td>19.5%</td>
<td>21.9%</td>
</tr>
</tbody>
</table>

Ogden, JAMA 2016
Obesity and Extreme Obesity

Growth in Childhood Obesity Rates

- Class 3
- Class 2
- All Obesity
- Overweight

JAMA Pediatrics 2014; 168 (6) June
Simulation of Growth Trajectories of Childhood Obesity into Adulthood


- 57% of children today are projected to have obesity at age 35

- NEJM 2017
Financial Impact

• Cost of Obesity
  • 2003 $75 billion
  • 2008 $144 Billion
  • 2013 $342 Billion
  • 2025 WHO predicts worldwide cost $1.2 Trillion

Thorpe, K. 2009, Miller 2018
Obesity Related Health Conditions

Medical Complications of Obesity

- Pulmonary disease
  - abnormal function
  - obstructive sleep apnea
  - hypoventilation syndrome
- Idiopathic intracranial hypertension
- Stroke
- Cataracts
- Coronary heart disease
  - Diabetes
  - Dyslipidemia
  - Hypertension
- Severe pancreatitis
- Cancer
  - breast, uterus, cervix
  - colon, esophagus, pancreas
  - kidney, prostate
- Osteoarthritis
- Gynecologic abnormalities
  - abnormal menses
  - infertility
  - polycystic ovarian syndrome
- Gall bladder disease
- Nonalcoholic fatty liver disease
  - steatosis
  - steatohepatitis
  - cirrhosis
- Skin
- Gout
- Phlebitis
  - venous stasis
Obesity Education

• AAMC Report VIII: Contemporary Issues in Medicine: The Prevention and Treatment of Overweight and Obesity  
  • Published in 2007  
  • Last comprehensive review of obesity education
• Guiding Principles
  • *The universal importance of weight management, including the prevention of overweight and obesity, should be emphasized in the medical school curriculum*
  • *Medical education should not contribute to the stigmatization of overweight and obese patients*
Guiding Principles

• The current uncertainties regarding some aspects of preventing and treating overweight and obesity should not prevent future physicians from learning about overweight and obesity.

• The ideal setting to treat patients who are overweight or obese includes social support and behavioral treatment with a multidisciplinary team.
AAMC Report

• Guiding Principles
  • *Physicians must better appreciate and support population-based efforts to prevent and control overweight and obesity*
AAMC Report

• Basic Sciences
  • Metabolic, genetic and environmental effects on obesity
  • Energy balance including physiologic aspects of energy consumption & expenditure
  • Nutrition basics – calorie content of macronutrients
  • Benefits of physical activity
  • Consequences of physical inactivity
AAMC Report

• Basic Sciences
  • Components of Total Energy Expenditure – RMR, TEF, PA
  • Role of neuro-endocrine system on obesity
  • Metabolic and immunologic consequences of obesity
  • Pharmacologic approaches to treating overweight and obesity
  • Mechanisms for weight loss including surgical treatments for obesity
AAMC Report

• Clinical Sciences
  • “Coherent” clinical curriculum that reinforces knowledge, skills, and attitudes longitudinally
  • Perform a history and physical specific to patient w/ OW/obesity
  • Develop social, family and cultural sensitivity
AAMC Report

• Clinical Sciences
  • Assess and make recommendations related to:
    • Nutrition
    • Physical activity
    • Behavioral interventions
    • Surgery
  • Referral and follow-up
Recommendations

- Overweight and obesity-related learning objectives should be integrated vertically and horizontally in all four years of medical school.
- A combination of didactic and interactive instructional methods should be employed.
- Because the prevention and treatment of overweight and obesity continue to be evolving fields, a commitment to critical appraisal and lifelong learning should be fostered.
Integrating Obesity Education into Curriculum

• Northwestern University – Feinberg School of Medicine
  • Include nutrition and obesity education into medical school curriculum
  • Weaved throughout the curriculum
  • More to come in June
Integrating Obesity Education into Curriculum

- Oklahoma State University - College of Osteopathic Medicine
- Incorporated into all 4 years
  - Basic sciences and clinical didactics
  - Focused sessions on obesity including behavioral health
  - Clinical rotation opportunities with community based partners
  - Broad, integrated exposure to obesity education
Integrating Obesity Education into Curriculum

- Campbell University School of Osteopathic Medicine
  - 4-year program
  - 2-years didactics
    - First semester basic sciences
    - Three semesters systems-based education
  - 2-years clinical rotations
Integrating Obesity Education - CUSOM

• Biochemistry
  • Macronutrient metabolism
    • Glucose, fructose, and lipids

• Physiology
  • Metabolism – RMR, calories, physical activity
  • Neuro-hormonal pathways
Integrating Obesity Education - CUSOM

• Pharmacology
  • Anti-obesity Medications

• Pathology
  • Disease consequences of nutrient imbalance
  • Macronutrients
  • Micronutrients
  • Genetic disorders
Integrating Obesity Education - CUSOM

• Musculoskeletal System
  • Physical activity
  • Nutritional needs
  • Metabolic and biomechanical impact
Integrating Obesity Education - CUSOM

• Cardiopulmonary System
  • Metabolic effects
  • Biomechanical effects
  • Role of diet and weight
Integrating Obesity Education - CUSOM

• Endocrine
  • Insulin resistance
  • Type 2 diabetes (T2DM)
  • Role of weight loss
  • Diabetes medications
Integrating Obesity Education - CUSOM

• Gastrointestinal System
  • Non-alcoholic fatty liver disease
  • Gallbladder disease
  • Gut microbiome
  • Vagus nerve
Integrating Obesity Education - CUSOM

• Other
  • Bias and Stigma
  • 50 Studies Every Doctor Should Know
    • Comparison of Different Diet Strategies
    • Swedish Obesity Study
Integrating Obesity Education - CUSOM

• Other
  • Behavioral Health
    • Motivational Interviewing
  • Neurology
    • Cognitive function
  • Reproductive Health
    • Fertility
    • PCOS
Integrating Obesity Education - CUSOM

• Obesity Specific Lectures
  • Introduction to Obesity Medicine
    • Epidemiology
    • Definitions and stages of obesity
    • Health consequences of obesity
  • Appetite Regulation
    • Neuro-hormonal influences on obesity
    • Entero-hormonal influences on obesity
    • Adipocyte role in appetite regulation
Integrating Obesity Education - CUSOM

• Principles of Dietary Regulation
  • Macronutrients
  • Dietary interventions
  • Adaptive thermogenesis

• Evaluation and Treatment of the Patient with Obesity
  • Obesity focused history and physical exam
  • Anti-obesity medication
  • Types, indications and complications of bariatric surgery
Future Directions

• Obesity Medicine Education Collaboration
  • Joint project of the Obesity Medicine Association, The Obesity Society and the American Society of Metabolic and Bariatric Surgeons
  • OMEC engaged working groups consisting of 40 obesity and education experts from 13 different medical societies
Future Directions

• Obesity Medicine Education Collaboration
  • Goal to develop **obesity focused competencies** evaluation benchmarks for medical educators at the UME, GME and fellowship levels
  • Currently developed following **6 AGME Competency Domains** with respective **benchmarks** which traverse all **3 levels** of education
Future Directions

• Obesity Medicine Education Collaboration
  • 32 obesity focused competencies were developed in the following domains
    1. Interpersonal and Communication Skills
    2. Medical Knowledge
    3. Patient Care
    4. Practice-base Learning and Improvement
    5. Systems Base Practice
    6. Professionalism
Future Directions

• Obesity Medicine Education Collaboration
  • Currently undergoing external review - 16 medical societies to date
  • Obesity based competencies are intended to facilitate incorporation of obesity education at all levels of medical education.
Resources

• Obesity Medicine Association
  • Organization of clinical obesity specialists
  • Obesity Academy
    • Online repository for obesity related lecture as well as a resource for obesity education for clinicians-in-training
    • Obesity Algorithm – a free comprehensive resource for the evaluation and treatment of the patient with obesity
  • www.obesitymedicine.org
Resources

• The Obesity Society
  • Organization of obesity researchers and specialists
    • www.obesity.org

• American Society of Metabolic and Bariatric Surgeons
  • Organization of surgical specialists in the treatment of the patient with obesity
    • www asmbs org
Resources

• Obesity Action Coalition
  • National non-profit organization dedicated to giving a voice to the individual affected by the disease of obesity
References

• Davis SW, Ip EH, Marion GS, et al. Are medical students aware of their anti-obesity bias? Acad Med 2013;88:00-00.


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References


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