Myths, Presumptions, and Facts about Obesity

*Obesity Fatigue: The Myths, Facts, Treatments, Benefits Coverage, and Paths Forward*

Andrew W Brown, PhD

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Acknowledgments

Some slides were inspired by or made in collaboration with numerous colleagues. They will be acknowledged throughout verbally, with citations, or on the slides. However, the content reflects my thoughts, and not necessarily these individuals, anyone else, or any organization.

Disclosures

None relevant for this talk.

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Slides are available upon request: awb1@iu.edu
Outline

1. The implied simplicity of obesity
2. Simple ideas that have not worked
3. Treat obesity like the complex condition it is
4. Moving forward
The implied simplicity of obesity
The cure for obesity, heart disease, and anxiety? Puppies!
Pfren ★ Leader • 3h
Why does the truth keep getting thrown as if it's criminal. Eat healthy and get some exercise. That's it. If you can't see to your basic needs please don't get a dog. Notice how fat, sick people have fat, sick dogs. Not fair to the dog.

faye111 ★ Leader • 10h • Edited
If you want you health to improve work on your diet and exercise. Pets are nice, but unless you can deal with your over eating and unhealthy food, a pet isn't going to do much. As for stress maybe walking or hiking for exercise will help. After you get your eating and exercise started and you have figured out what works for you, then get a pet.

Sonsoakr ★ Leader • 1d
On average, obese people who have dogs, usually the dogs are fat too. Obese people are hopeless. They like to eat and are obsessed with it. They usually don't walk their dogs. They rather open the back door and let them out.

NoPoliticalBull ★ Leader • 2d
Want a cure for obesity-heart disease-and anxiety.....STOP EATING!!! Puppies do not stay puppies for long and many people with self indulged ailments cannot even take care of themselves. So to save the puppies...just stop eating. NEXT!!!

Lizabsidm ★ Leader • 2d
The cure is not puppies, it's stop stuffing your face with junk & exercise!
<table>
<thead>
<tr>
<th>Initial BMI Category</th>
<th>Annual Probability of Attaining 5% Reduction in Body Weight</th>
<th>Annual Probability of Attaining Normal BMI, Estimate (95% CI)</th>
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</thead>
<tbody>
<tr>
<td><strong>Men, kg/m²</strong></td>
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<tr>
<td>30.0–34.9</td>
<td>1 in 12</td>
<td>1 in 210 (197, 225)</td>
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<tr>
<td>35.0–39.9</td>
<td>1 in 9</td>
<td>1 in 701 (619, 797)</td>
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<tr>
<td>40.0–44.9</td>
<td>1 in 8</td>
<td>1 in 1290 (1023, 1651)</td>
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<tr>
<td>≥ 45.0</td>
<td>1 in 5</td>
<td>1 in 362 (300, 442)</td>
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<tr>
<td><strong>Women, kg/m²</strong></td>
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<tr>
<td>30.0–34.9</td>
<td>1 in 10</td>
<td>1 in 124 (118, 131)</td>
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<tr>
<td>35.0–39.9</td>
<td>1 in 9</td>
<td>1 in 430 (390, 475)</td>
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<tr>
<td>40.0–44.9</td>
<td>1 in 7</td>
<td>1 in 677 (599, 769)</td>
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<tr>
<td>≥ 45.0</td>
<td>1 in 6</td>
<td>1 in 608 (527, 704)</td>
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</tbody>
</table>
Data for subsequent changes in BMI category in participants who showed an initial decrease in BMI category for (a) women and (b) men


E.g., if the individual went from 35-39 down to 30-34, and subsequently increased to 35-39 again.
Energy Balance: Is it really this simple?

Energy stored = Energy in – Energy out

Einstein’s razor: “Make things as simple as possible but no simpler.”
Obesity is not simple
Simple ideas that have not worked

“The valuable capacity of the human mind to simplify a complex situation becomes dangerous when not controlled in terms of definitely stated criteria.”

– Simon Kuznets, 1934
### Breakfast eating versus skipping

Eating compared to skipping breakfast has no discernible benefit for obesity-related anthropometrics: systematic review and meta-analysis of randomized controlled trials.

Michelle M Bohan Brown¹,², Jillian E Milanesi¹, David B Allison² and Andrew W Brown²

April 2017 *The FASEB Journal* vol. 31 no. 1 Supplement lb363

<table>
<thead>
<tr>
<th>Measure</th>
<th>Total (95% CI)</th>
<th>Heterogeneity: Tau²</th>
<th>Chi²</th>
<th>df</th>
<th>P</th>
<th>F</th>
<th>Test for overall effect</th>
<th>Z</th>
<th>P</th>
<th>Test for subarous differences: Chi²</th>
<th>df</th>
<th>P</th>
<th>F</th>
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<tr>
<td><strong>Body weight</strong></td>
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<tr>
<td>BMI</td>
<td>983</td>
<td>0.14, df = 8 (P = 0.02), P = 52%</td>
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<td>Lean/FFM</td>
<td>983</td>
<td>0.14, df = 8 (P = 0.02), P = 52%</td>
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<td>Fat %</td>
<td>983</td>
<td>0.14, df = 8 (P = 0.02), P = 52%</td>
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<td>Fat mass</td>
<td>983</td>
<td>0.14, df = 8 (P = 0.02), P = 52%</td>
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<td>WC</td>
<td>983</td>
<td>0.14, df = 8 (P = 0.02), P = 52%</td>
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<td>W:H ratio</td>
<td>983</td>
<td>0.14, df = 8 (P = 0.02), P = 52%</td>
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<td><strong>SAD</strong></td>
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</table>
Fruits and vegetables

Increased fruit and vegetable intake has no discernible effect on weight loss: a systematic review and meta-analysis\(^1\)\(^\rightarrow\)\(^4\)

*Kathryn A Kaiser, Andrew W Brown, Michelle M Bohan Brown, James M Shikany, Richard D Mattes, and David B Allison

"Plate size did not influence energy intake, meal composition, or palatability in normal weight women during a multi-itemed open buffet lunch."
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5037070/

"Using a smaller dining plate does not suppress food intake from a buffet lunch meal in overweight, unrestrained women"

"The results of the experiment suggest that the plate size had no significant effect on the total energy of the meal."

"Counter to widely held belief, the use of a smaller bowl did not reduce snack food intake. Public health recommendations advising the use of smaller dishware to reduce food consumption are premature, as this strategy may not be effective."

"Eat your meals off smaller plates and bowls and you'll serve yourself about 10 percent less, which can add up to hundreds of calories less every day."

Cherry picked contrary examples
Some examples existed with decreased intake and still more without.

But!

Where are the RCTs of WEIGHT?
Will small sustained changes in energy intake or expenditure produce large, long-term weight changes?

35 year old 165 lb male walking 1 mile/d ~100 kcal/d

In 10 years, he would weigh 61 lbs by the 3500 kcal rule

Weight Loss Predictor: http://www.pbrc.edu/research-and-faculty/calculators/weight-loss-predictor/
The mean difference in energy expenditure between sitting and standing was 0.15 kcal/min. By substituting sitting with standing for 6 hours/day, a 65 kg person will expend an additional 54 kcal/day. Assuming no increase in energy intake, this difference in energy expenditure would be translated into the energy content of about 2.5 kg of body fat mass in 1 year.

Simple expectations of weight change

Stand up -- it could help you lose weight
A 65 kg person would lose 10 kg in 4 years by standing instead of sitting for six hours a day.

Date: January 31, 2018
Source: European Society of Cardiology
Summary: You might want to read this on your feet. A new study found that sitting for six hours a day could prevent weight gain and help people lose weight.

https://www.sciencedaily.com/releases/2018/01/180131184748.htm

Jamie Oliver: stand at your desks now, class, and fight obesity
The TV chef is part of a high-profile group with radical ideas on improving child health.

https://www.thetimes.co.uk/article/jamie-oliver-stand-at-your-desks-now-class-and-fight-obesity-vph8k8d9
"There was no significant difference in weight change between a healthy low-fat diet vs a healthy low-carbohydrate diet, and neither genotype pattern nor baseline insulin secretion was associated with the dietary effects on weight loss."

(emphasis added)
Treat obesity like the complex condition it is
To extend the obesity–oedema analogy, addressing all forms of obesity simply with caloric restriction and exercise (‘eat less and move more’) would be akin to addressing all forms of oedema simply with fluid restriction and diuretics.

Stated another way, the treatment for edema is straightforward: Drink less, pee more.
# High-intensity, comprehensive lifestyle intervention

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight Loss</th>
<th>Weight-Loss Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counseling</td>
<td>≥14 in-person counseling sessions (individual or group) with a trained interventionist during a 6-mo period; recommendations for similarly structured, comprehensive Web-based interventions, as well as evidence-based commercial programs</td>
<td>Monthly or more frequent in-person or telephone sessions for ≥1 yr with a trained interventionist</td>
</tr>
<tr>
<td>Diet</td>
<td>Low-calorie diet (typically 1200–1500 kcal per day for women and 1500–1800 kcal per day for men), with macronutrient composition based on patient’s preferences and health status</td>
<td>Reduced-calorie diet, consistent with reduced body weight, with macronutrient composition based on patient’s preferences and health status</td>
</tr>
<tr>
<td>Physical activity</td>
<td>≥150 min per week of aerobic activity (e.g., brisk walking)</td>
<td>200–300 min per week of aerobic activity (e.g., brisk walking)</td>
</tr>
<tr>
<td>Behavioral therapy</td>
<td>Daily monitoring of food intake and physical activity, facilitated by paper diaries or smart-phone applications; weekly monitoring of weight; structured curriculum of behavioral change (e.g., DPP), including goal setting, problem solving, and stimulus control; regular feedback and support from a trained interventionist</td>
<td>Occasional or frequent monitoring of food intake and physical activity, as needed; weekly-to-daily monitoring of weight; curriculum of behavioral change, including problem solving, cognitive restructuring, and relapse prevention; regular feedback from a trained interventionist</td>
</tr>
</tbody>
</table>

Adapted from Jensen, et al. 2013 AHA/ACC/TOS Guidelines

## Some Medications for Weight Loss

<table>
<thead>
<tr>
<th>Name</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orlistat</td>
<td>Lipase inhibitor</td>
</tr>
<tr>
<td>Lorcaserin</td>
<td>5HT$_{2c}$ receptor agonist</td>
</tr>
<tr>
<td>Liraglutide</td>
<td>GLP-1 agonist</td>
</tr>
<tr>
<td>Phentermine-topiramate</td>
<td>Norepinephrine-releasing agent; GABA receptor modulation</td>
</tr>
<tr>
<td>Naltrexone-bupropion</td>
<td>Opioid antagonist; dopamine/norepinephrine reuptake inhibitor</td>
</tr>
</tbody>
</table>

Side-effects depend on the drug and the patient.

Pregnancy is a contraindication for all of them.

Some Common Surgical Procedures for Weight Loss
Comparing Weight Loss at One Year

- **High-Intensity Lifestyle Intervention**
  - Look AHEAD
  - DPP
  - Teixeira, et al.

- **Pharmacotherapy Intervention**
  - Placebo
  - Orlistat
  - Lorcaserin
  - Liraglutide
  - Phentermine–topiramate
  - Naltrexone–bupropion

- **Surgery**
  - MT/LI
  - LAGB
  - MT/LI
  - RYGB
  - MT/LI
  - VSG

- **Percentage of Participants**
  - ≥35%
  - ≥25%
  - ≥15%
  - ≥10%
  - ≥5%
Moving Forward
Moving forward

• Acknowledge the complexity of the etiology of obesity.
• "First do no harm" – maintain respect for persons with obesity.
• Things that do not affect weight might still improve health.
• For all claims, ask for evidence:
  • Does the recommendation work?
  • If so, in the real world, or in laboratory settings?
  • For whom?
  • For weight loss, preventing weight gain, or helping maintain weight loss?
• Action can still be taken with weak or no evidence, but it should be done so transparently.
Some Resources

https://www.niddk.nih.gov/health-information/weight-management/body-weight-planner
Obesity isn’t simple

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2018, 06-05

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