Critical Analysis of Popular Diets and Supplements

Division of Human Nutrition

Instructor: Lawrence J. Cheskin, M.D.
Associate Professor, International Health
Director, Johns Hopkins Weight Management Center
Course Schedule

- 4-5 introductory lectures
- Instruction in use of analysis programs
- Sample diet analysis
- Midterm
- Student presentations and discussion
- Final
Lecture Topics

- Dieting and Obesity in the US
- Ingestive Science: The Control of Eating
- Digestion and Metabolism
- Dietary Supplements
Medical Aspects of Obesity and Dieting
Do You Know Your Own BMI?
BMI = \frac{\text{weight (kg)}}{\text{height (m)}^2}

<table>
<thead>
<tr>
<th>Height</th>
<th>120</th>
<th>130</th>
<th>140</th>
<th>150</th>
<th>160</th>
<th>170</th>
<th>180</th>
<th>190</th>
<th>200</th>
<th>210</th>
<th>220</th>
<th>230</th>
<th>240</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>5'0&quot;</td>
<td>23</td>
<td>25</td>
<td>27</td>
<td>29</td>
<td>31</td>
<td>33</td>
<td>35</td>
<td>37</td>
<td>39</td>
<td>41</td>
<td>43</td>
<td>45</td>
<td>47</td>
<td>49</td>
</tr>
<tr>
<td>5'2&quot;</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>31</td>
<td>33</td>
<td>35</td>
<td>37</td>
<td>38</td>
<td>40</td>
<td>42</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>5'4&quot;</td>
<td>21</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>28</td>
<td>29</td>
<td>31</td>
<td>33</td>
<td>34</td>
<td>36</td>
<td>38</td>
<td>40</td>
<td>41</td>
<td>43</td>
</tr>
<tr>
<td>5'6&quot;</td>
<td>19</td>
<td>21</td>
<td>23</td>
<td>24</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>31</td>
<td>32</td>
<td>34</td>
<td>36</td>
<td>37</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>5'8&quot;</td>
<td>18</td>
<td>20</td>
<td>21</td>
<td>23</td>
<td>24</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>30</td>
<td>32</td>
<td>34</td>
<td>35</td>
<td>37</td>
<td>38</td>
</tr>
<tr>
<td>5'10&quot;</td>
<td>17</td>
<td>19</td>
<td>20</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>30</td>
<td>32</td>
<td>33</td>
<td>35</td>
<td>36</td>
</tr>
<tr>
<td>6'</td>
<td>16</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>33</td>
<td>34</td>
</tr>
<tr>
<td>6'2&quot;</td>
<td>15</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>30</td>
<td>31</td>
<td>32</td>
</tr>
</tbody>
</table>
About Two-out-of Three U.S. Adults Are Overweight or Obese

Source: NHLBI Obes Res. 1998: 6 (suppl 2) 51S–209S
Rising Prevalence of Obesity

- The prevalence of obesity among children and adolescents has increased approximately 50% over the past 20 years and now affects more than one in four young people.\textsuperscript{15}

- Overweight children have an increased likelihood of being obese as an adult\textsuperscript{16} and obesity in both children and adults is associated with significant morbidity and increased early mortality.\textsuperscript{17}
Costs of Obesity:

- Obesity is estimated to cause approximately 400,000 deaths annually

- 1-year direct and indirect costs are estimated to be $117 billion.\(^{25}\)

- This represents 9.1% of all health care costs in the U.S.
How Might Obesity Shorten Lifespan?

Leading Causes of Death, U.S.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Rate/100,000</th>
<th>Obesity-Related</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CHD</td>
<td>175</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Cancer</td>
<td>133</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Accidents</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>4. Stroke</td>
<td>31</td>
<td>Yes</td>
</tr>
<tr>
<td>5. COPD</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>6. Pneumonia</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>7. Suicide</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>8. Diabetes</td>
<td>10</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Life Expectancy and Obesity

- Two studies published in 2003 find that obesity shortens life expectancy by at least several years.
- The combination of obesity and smoking is particularly costly, and may reduce life by a mean of 13 years.
Comorbid Conditions and BMI

- Comorbid conditions that increase as BMI increases:
  - Hypertension
  - Dyslipidemias
  - Type-2 diabetes
Effects of Substantial Weight Loss on Coexisting Health Problems
(Among Approximately 850 Patients Who Completed a Very Low Calorie Diet)

- **Hypertension (41% prevalence)**
  - BP normalized, off all drugs: 71%
  - BP normalized, still on drugs: 12%
  - BP still high after weight loss: 17%

- **Diabetes mellitus (8% prevalence)**
  - Oral hypoglycemics discontinued: 100%
  - Insulin discontinued completely: 87%
  - Insulin dose decreased: 10%
Intentional Weight Loss and Reduction in Mortality

Reduction of Adjusted Mortality Rate (%)

Are We Addressing Obesity Adequately?

I- Access to care & care utilization

- Obese should *need* to seek care more

Studies show:
- Obese get fewer preventive tests (Pap, breast exams)
- More obese delay/cancel medical appts

These findings could be due to patient discomfort with providers, or vice versa
Are We Addressing Obesity Adequately?  
II- Health Professionals’ Attitude

- Obesity is almost uniformly endorsed as a problem second in importance only to smoking cessation (survey of 1222 physicians); however,
  - Most physicians surveyed express low confidence in their ability to treat obesity
  - Most report low or no exposure to systematic training in Rx of obesity
  - Yet, rarely refer formally to weight-loss programs
Are We Addressing Obesity Adequately? III- Health Professionals and Prejudice

○ Survey of Canadian nurses:
  ● 1/3 prefer not to care for obese at all
  ● 24% agreed that the obese are “repulsive”

○ Survey of physicians (Adams 1993):
  ● 21% reluctant to do pelvics on obese
  ● 2% reluctant for very attractive patients
  ● 0% reluctant for thin patients
Blinded evaluation of a chart by 122 PCPs: told only CC (migraines), sex, nl/OW/obese

- Obese pts were prescribed more tests
- Providers estimated they would spend less time with the pts they were told were obese (22 vs 31 min)
- Obese were described more negatively on 12/13 indices (eg, “extent pt would annoy me”)

Are We Addressing Obesity Adequately?
III- Health Professionals & Prejudice-2
Evaluation of Obesity

- Sleep disturbances
- Drugs
- Family history
- Endocrine
- Smoking status
A Classification of the Obesities

**Neuroendocrine Obesities**
- Hypothalmic syndrome
- Cushing’s syndrome
- Hypothyroidism
- Polycystic ovary (Stein-Leventhal) syndrome
- Pseudohypoparathyroidism
- Hypogonadism
- Growth hormone deficiency
- Insulinoma and hyperinsulinism

**Iatrogenic**
- Drugs (psychotropics, corticosteroids)
- Hypothalamic surgery

**Nutritional Imbalance and Obesity**
- High-calorie, high-fat diets
- Cafeteria diets

**Physical Inactivity**
- Enforced (postoperative)
- Aging
- Job-related

**Genetic (Dysmorphic) Obesities**
- Autosomal recessive
- X-linked
- Chromosomal
Drugs Associated with Weight Gain

- Steroids; BCPs; HRT
- Tricyclic antidepressants
- Phenothiazines
- Lithium
- Antihistamines
- Sulfonylureas, insulin
- Beta blockers, thiazides
Treatments for Obesity

- Lifestyle modification
  - Diet
  - Physical activity
  - Behavior modification
- Pharmacotherapy
- Surgery
Lifestyle Modifications Alone May Not Provide Long-Term Results

- Diet and behavior modification with exercise
  - 58% regain weight lost by year two