Of Breakfast, Snacks and Bars

Dr. Julie Miller Jones
Professor Emerita of Nutrition, St. Catherine University
jmjones@stkate.edu
What This Talk Will Cover:

- Role of breakfast
- Role of snacks
- New data on bars
"Only dull people are brilliant at breakfast."

Oscar Wilde
Breakfast: Nutrients for Adults

- Breakfast consumption associated with:
  - Better overall nutrient intakes
  - More “nutrients of concern”
  - Less fat/cholesterol intake overall
  - Higher intakes of dietary fiber

Breakfast and Mood

- N= 686 Wales
- Mood better with breakfast, happier, more relaxed
- Men - CHO - associated with feeling happy rather than sad and relaxed rather than stressed
  - No association with fat, protein and total energy

Breakfast, BMI and Adults

- NHANES 1999 – 2004
  - n=12,300
  - 80% reported eating breakfast
  - 17% pastry, meal replacement bar/drink or item not in one food group
- Women who ate breakfast - lower BMI
- Men - no difference overall
  - Depended on the quality of the breakfast
  - If breakfast was very high calorie, then NO difference in BMI

Kant et al AJCN 2008
Breakfast: One Habit of Successful Losers

- National Weight Control Registry (NWCR) of “successful losers”
  - Founded in 1994 by Drs. James Hill and Rena Wing
  - ≥30 lbs. of weight loss for 1+ years
  - Lost an average of 67 lbs.; kept it off for an average of 6 years
- 78% of “losers” ate breakfast regularly; only 4% never ate breakfast
- Six habits – one was to eat breakfast

Diabetics: Breakfast Equals Better Weight Loss Success

- LookAHEAD study: > 5000 people newly diagnosed with type 2 diabetes, age 45-60
- Less frequent breakfast eaters - higher BMI
- Breakfast eaters - better weight loss success
- Successful losers - ate more fruits and vegetables as one of three success strategies

Breakfast & Weight Loss: 2014 Study

- 3 months, aged 20-65 years
- 3-parallel-arm RCT healthy, overweight adults BMI 25-40
- No discernable effect of breakfast on weight loss in free-living adults who were attempting to lose weight
  - Is 3 months long enough?
  - What was eaten?

Nuts, Whole Grains and Weight

- Nuts – an inverse association between frequency of nut consumption and BMI, waist circumference, or tendency to gain weight over time
  - PREDIMED - Obesity went up as nut consumption went down
  - 18 mo. almond-feeding trials, no greater weight loss but better blood lipids
- Whole grains – an inverse association with tendency to gain weight over time and body fat
- Contrary to popular belief – meta-analysis weight did not increase with nuts.

Nut/Cereal Combos = More Protein, Lysine and Arginine

- 1834 NL CODING study (n=443 men, n=1391 women)
- Protein - significant inverse relationships with:
  - Weight
  - Waist circumference and waist-to-hip ratio
  - BMI
  - %Body fat
  - Significant positive relationships
  - %Lean mass

More protein is associated with lower measures of body weight

Better Weight Maintenance

- Breakfast eaters had better weight maintenance
- Protein is part of weight maintenance!!
Prudent Breakfast, Fat and Inflammation

- 79 overweight, hypercholesterolemic prudent breakfast
  - Low-fat milk or yogurt, bilberry or lingonberry jam, whole grain bread, low-fat spread, poultry or fatty fish, and fruit - 12 weeks

- Reduced visceral fat and inflammation

Cereal vs. No/Other Breakfast

- Skippers
  - 20% - children
  - 31.5% - teens
- RTE cereal eaters
  - 35.9% - children
  - 24.5% - teens

- Other Breakfasts and Skippers vs. RTE cereal eaters
  - Higher BMI/ waist circumference
  - Greater prevalence of obesity

- RTE cereal eaters
  - \(\downarrow\) intakes fat and cholesterol
  - \(\uparrow\) intakes CHO, dietary fiber, and several micronutrients

Breakfast and Cardiovascular Disease

- 29,206 US men in the Health Professionals Follow-Up Study (since 1992)
- Men who skipped breakfast had 21% higher risk of T2D than did men who consumed breakfast
- Compared with men who ate 3 times/d, men who ate 1-2 times/d had a higher risk of T2D (RR: 1.25; 95% CI: 1.08, 1.45)
- Additional snacks were associated with increased T2D risk, but these associations were attenuated after adjustment for BMI
Breakfast: Why is it helpful?

- Breakfast provides energy for the brain
- Breakfast skipping impairs attention and memory
- Breakfast improved alertness
- Missing breakfast interferes with cognition and learning
Cereal and Bars at Breakfast and Snack Time
“It takes some skill to spoil a breakfast - even the English can't do it.”

John Kenneth Galbraith
Breakfast Choices

- NHANES 12,300
- 80% ate something for breakfast
- 17% reported having a pastry, meal replacement drink or bar, or some other item that didn't fit into one of the five food groups (grain, fruit, vegetable, dairy, and meat or meat alternative)
- Look for ‘better choices’ like bars with oats, nuts, whey protein

Kant et al AJCN 2008
Breakfast On The Run

- 1,700 college age adults
- Not sitting down to a meal - less healthy choices
  - 35 percent of men
  - 42 percent of women
  - Ate fewer fruits, vegetables, more fatty foods, saturated fats, soft drinks
- Suggestions - bars, fresh dried fruits, drinkable yogurts/Gogurt, string cheese
- Whole grain rolls, bags of high fiber cereal

Larson et. al. 2009
Q29. Why do you choose to eat cereal as a breakfast food? Select all that apply. (Must have indicated eating cereal at least several times per month in Q28.)

“To eat well in England you should have breakfast three times a day.”

W. Somerset Maugham
Snacking and Implications On Diet

- Portion of US adults who are snacking:
  - 71% snacked in 1977-1978
  - 97% snacked in 2003-2006

- Snacking associated with:
  - Increased energy
    - Energy ↑ 18% to 24% (↑ frequency and size)
  - Better diet quality
    - ↑ likelihood of meeting selected national recommendations
In Contrast: Snacking’s Contribution to Energy and Nutrients

- Much energy but little nutrition
- Usually obese children and adults
  - Energy-dense foods
  - Eating in the absence of hunger in response to external non-physiological cues
  - Inattention to the act of eating

- Needed E & valuable micronutrients such as calcium
  - Usually healthy, normal-weight children and adults
- Snack choice matters
  - Leatherhead study found that consuming almonds mid-morning led to lower intakes at lunch and dinner, even though the overall energy intake for the day did not change

Bellisle F. Physiol Behav. 2014;134:38-43.
Energy Compensation

- Healthy men 25-50 years, BMI= 25-35, 12 weeks
- N= 45 per group (control, cereal bar, almonds)
- Almonds
  - Significantly higher eating frequency than other groups
  - NOT higher energy intake, body weight or percentage body fat
- Promoted a higher eating frequency, but not intake
- ➔ Energy compensation

Snacks and Impact on Diet

- With better diet quality
  - ↑ likelihood of meeting recommendations
- Increased intakes of fruit, whole grains, and fiber which could promote satiety

Frequency of Snack Consumption
(Times per Year)

- 45
  Fresh Fruit
- 40 - 44.9
  Cereal
  Snack Bars
- 35 – 39.9
  Crackers/Cookies
  Yogurt
  Chips
  Nuts
- 30 – 34.5
  Chocolate
  Other Candy
  Breads
- <30
  Popcorn

Snack/Snack Bar Study

- August 2014 survey by the Almond Board of California
- 2,000 consumers across four census regions: Northeast, Southeast, Midwest, and West
  - Current bar users - 2x/month on average
  - Have at least shared responsibility for household’s grocery shopping decisions and bar purchase decision
  - No nut allergies in household
  - Age 20-69
  - 50-60% women, 40-50% men

Bars: A Popular Snack Choice

- Over half of people surveyed (56%) claimed to have eaten bars in the past three days
- 18% chose a bar with nuts
- The top texture of the last bar eaten was “chewy”

N= survey of 2930
## Bar Attributes “Delivered Very Well”

<table>
<thead>
<tr>
<th>Bar Attribute</th>
<th>% Delivered Very Well</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenient</td>
<td>71%</td>
</tr>
<tr>
<td>Tastes great</td>
<td>68%</td>
</tr>
<tr>
<td>Appropriate for everyday use</td>
<td>66%</td>
</tr>
<tr>
<td>Satisfies a craving</td>
<td>60%</td>
</tr>
<tr>
<td>Filling/satisfies my hunger</td>
<td>59%</td>
</tr>
<tr>
<td>For adults</td>
<td>59%</td>
</tr>
<tr>
<td>A good value for the money</td>
<td>57%</td>
</tr>
<tr>
<td>Provides positive nutrition (e.g., protein, fiber,...)</td>
<td>56%</td>
</tr>
<tr>
<td>Something I don’t feel guilty about eating</td>
<td>55%</td>
</tr>
<tr>
<td>Provides a multi-dimensional taste and texture</td>
<td>53%</td>
</tr>
<tr>
<td>Familiar</td>
<td>52%</td>
</tr>
<tr>
<td>Uses the highest quality ingredients</td>
<td>51%</td>
</tr>
<tr>
<td>Not too sweet</td>
<td>51%</td>
</tr>
<tr>
<td>Provides energy</td>
<td>50%</td>
</tr>
<tr>
<td>Something everyone in the family will enjoy</td>
<td>50%</td>
</tr>
<tr>
<td>Premium</td>
<td>47%</td>
</tr>
<tr>
<td>Provides an indulgent eating experience</td>
<td>46%</td>
</tr>
<tr>
<td>Crunchy texture</td>
<td>46%</td>
</tr>
<tr>
<td>Lower in fat than other options</td>
<td>45%</td>
</tr>
<tr>
<td>Made with all-natural ingredients</td>
<td>45%</td>
</tr>
</tbody>
</table>
Benefits/Claims on Most Recent Bar Occasions

- High Fiber
- High Protein
- Satisfies Hunger
- Natural Ingredients
- Nuts in Bars
  - >50% of respondents felt that nuts were important in bars
  - 41% indicated nuts are “Extremely/Very important”
- Almonds in Bars
  - >50% of respondents felt that almonds were important in bars
  - 31% indicated almonds are “Extremely/Very important”

Bar Consumption

Among those who eat bars at least 1X per month:

<table>
<thead>
<tr>
<th>Occasion</th>
<th>Times/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snack before breakfast</td>
<td>18.7</td>
</tr>
<tr>
<td>Breakfast</td>
<td>28.8</td>
</tr>
<tr>
<td>Mid-morning snack</td>
<td>27.2</td>
</tr>
<tr>
<td>Lunch</td>
<td>17.1</td>
</tr>
<tr>
<td>Mid-afternoon snack</td>
<td>24</td>
</tr>
<tr>
<td>After-dinner snack</td>
<td>20.2</td>
</tr>
</tbody>
</table>

Optimizing Breakfast and Snacks
Nut and Cereal Combinations

- 55% regularly choose cereals containing nuts
- Among respondents that indicated eating cereals that contained nuts, almonds were the most frequently cited (73%)

Q36. DO any of the cereals you regularly eat contain nuts as an ingredient?

- Yes, one or more of the cereals I regularly eat contains nuts as an ingredient.
- I am not sure if any of the cereals I regularly eat contain nuts.
- No, none of the cereals I regularly eat contain nuts as an ingredient.

“My wife and I tried to breakfast together, but we had to stop or our marriage would have been wrecked.”

Winston Churchill
Ingredients in Most Recently Chosen Bars

A Grain/Nut Marriage

<table>
<thead>
<tr>
<th>Nuts</th>
<th>Nut variety</th>
<th>Any other ingredients</th>
<th>52%</th>
<th>53%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almonds</td>
<td>23%</td>
<td>Granola</td>
<td></td>
<td>24%</td>
</tr>
<tr>
<td>Peanuts</td>
<td>23%</td>
<td>Oats</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Cashews</td>
<td>9%</td>
<td>Crisp rice</td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>Walnuts</td>
<td>8%</td>
<td>Yogurt/Greek yogurt</td>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>Pecans</td>
<td>6%</td>
<td>Soy protein</td>
<td></td>
<td>5%</td>
</tr>
<tr>
<td>Hazelnuts</td>
<td>4%</td>
<td>Pretzels</td>
<td></td>
<td>4%</td>
</tr>
<tr>
<td>Macadamia</td>
<td>4%</td>
<td>Seeds</td>
<td></td>
<td>4%</td>
</tr>
<tr>
<td>Pistachios</td>
<td>3%</td>
<td>Graham cracker</td>
<td></td>
<td>3%</td>
</tr>
</tbody>
</table>

Newer ingredient trends:
- Yogurt/Greek yogurt
- Meat protein
- Ancient/unusual grains and seeds
- Vegetables
## Fillings and Flavors in Most Recently Chosen Bar

<table>
<thead>
<tr>
<th>Any Filling/Flavor</th>
<th>81%</th>
<th>Any Fruit Flavor/Pieces</th>
<th>46%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chocolate</td>
<td>27%</td>
<td>Strawberry</td>
<td>14%</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>27%</td>
<td>Blueberry</td>
<td>9%</td>
</tr>
<tr>
<td>Honey</td>
<td>16%</td>
<td>Raisin</td>
<td>9%</td>
</tr>
<tr>
<td>Milk Chocolate</td>
<td>15%</td>
<td>Apple</td>
<td>9%</td>
</tr>
<tr>
<td>Dk Chocolate</td>
<td>14%</td>
<td>Cranberry</td>
<td>7%</td>
</tr>
<tr>
<td>Caramel</td>
<td>11%</td>
<td>Coconut</td>
<td>6%</td>
</tr>
<tr>
<td>Vanilla</td>
<td>7%</td>
<td>Raspberry</td>
<td>6%</td>
</tr>
<tr>
<td>Fillings &amp; Flavors</td>
<td>Fruit Flavors /Pieces</td>
<td>Nuts</td>
<td>All Other Ingredients</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------</td>
<td>---------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>25% Coconut</td>
<td>13% Almonds</td>
<td>Granola 26%</td>
</tr>
<tr>
<td>Dark Chocolate</td>
<td>24% Strawberry</td>
<td>13% Cashews</td>
<td>Oats 19%</td>
</tr>
<tr>
<td>Caramel</td>
<td>18% Raisin</td>
<td>9% Peanuts</td>
<td>Crisp rice 9%</td>
</tr>
<tr>
<td>Chocolate</td>
<td>18% Raspberry</td>
<td>8% Pecans</td>
<td>Yogurt / Greek yogurt</td>
</tr>
<tr>
<td>Milk Chocolate</td>
<td>17% Cranberry</td>
<td>8% Walnuts</td>
<td>Graham cracker 6%</td>
</tr>
<tr>
<td>Honey</td>
<td>13% Blueberry</td>
<td>7% Macadamia</td>
<td>Toffee 6%</td>
</tr>
<tr>
<td>White Chocolate</td>
<td>10% Cherry</td>
<td>7% Hazelnuts</td>
<td>Marshmallow 5%</td>
</tr>
<tr>
<td>Fudge</td>
<td>7% Apple</td>
<td>6% Pistachios</td>
<td>Sea Salt 5%</td>
</tr>
<tr>
<td>Vanilla</td>
<td>7% Pomegranate</td>
<td>4% Pine nuts</td>
<td>Pretzels 5%</td>
</tr>
<tr>
<td>Almond Butter</td>
<td>6% Peach</td>
<td>3% Brazil nuts</td>
<td>Soy protein 4%</td>
</tr>
<tr>
<td>Coffee</td>
<td>6% Mango</td>
<td>3% Soy nuts</td>
<td>Ancient grains (i.e.,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>chia, quinoa, etc.) 4%</td>
</tr>
</tbody>
</table>
Snacks: Nut/Fruit Bars and Weight

- 94 adults, BMI > 25, 8 weeks
- Ad libitum diet or add two fruit and nut bars = 340 kcal to ad libitum diet
- No change weight, waist circumference, blood pressure, or blood lipid panel
- Nutrient-dense, fiber-rich/ satiating snacks may help with weight stabilization.

Nuts and Weight

- N = 118, 12 weeks
- 263 Calories from nuts, chocolate, or potato chips vs. no snacks
- No change in body weight any group
- Diet quality improved - nut group
- Adds to data that regular nut consumption reduces cardiovascular disease (CVD) risk and does not promote weight gain

Conclusions

- Breakfast and snacks can contribute nutrients and energy and have other health benefits
- Bars that are properly constructed can create opportunities to improve snacks and diets of breakfast skippers
- Right choices increase diet quality and weight control
- Cereal, nut, fruit combos help with diet quality and weight management
Thank You!

Please fill out the survey at your seat and enjoy the samples and recipes from the Almond Board of California:

- California Almond Savory Spiced Oat Fig Bar
- California Almond Raspberry Chocolate Clusters (GF)

Visit the Almond Board at exhibition booth #504 and check out www.almonds.com/food-professionals for more recipes and research.