PHYSICAL AND MENTAL HEALTH CONSEQUENCES OF FOOD INSECURITY

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Workshop: Food insecurity: Assessing Disparities, consequences, and policies
Definitions

Food insecurity: “...whenever the availability of nutritionally adequate and safe foods or the ability to acquire foods in socially acceptable way is limited or uncertain.”

Hunger: The uneasy or painful sensation caused by a lack of food. The recurrent and involuntary lack of access to food.

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Food insecurity and hunger are global issues
In developing countries, food insecurity is generally associated with:

- **Under-nutrition:**
  - Kwashiorkor: protein deficiency
  - Marasmus: calorie deficiency

But in the last 2 decades, obesity has become more common
But in America, this is the face of food insecurity:
Veterans:

- It is estimated that 130,000 to 200,000 veterans are homeless on any given night (this is about 20-25% of the homeless male population...placing them at risk for being food insecure)

- Obesity: 69% of veterans are overweight or obese (Wang et al., 2005)

- Obesity: Mean BMI for our sample was 30.5 ± 6.7 kg/m² (Smith et al., 2009)

- Only 12.5% of participants were classified as normal weight, while 37.5% were overweight, 46.9% were obese, and 3.1% were classified as excessively obese (Smith et al., 2009).

- Military changes eating behavior by forcing troops to eat fast boot camp, overeat at times, and endure food insecurity (Smith et al., 2009).
Hunger-obesity paradigm...the major physical problem among American’s food insecure
Obesity in the US

- 145 million American adults are overweight (BMI > 25 < 30) or obese (BMI > 30)
- 78 million American adults are obese (BMI > 30)
- 6 million American adults are severely obese (BMI > 40)
- 12.5 million children/adolescents are obese (> 95th percentile)

CDC, 2012
Overweight/obesity in America

- Excess weight is greater in minority groups
- 77% Black women have BMI > 25
- 72% Mexican American women have BMI > 25
- 75% Mexican American men have BMI > 25
- 76% Native American women have BMI > 25
- 57% White women have BMI > 25
- 61% Black men have BMI > 25
- 67% White men have BMI > 25

CDC, 2008;
*Dammann & Smith, 2010*
Eating/purchasing behavior among low-income urban women (n=445)

- Homelessness reduced the odds of purchasing most food group, and bought less fruits, veggies, lean meats and fish than home-based families

- Rates of less healthy food group purchases were higher compared to healthy food purchases

- Racial differences existed in types of meats purchased (African Americans preferred poultry, then fish; Native Americans preferred beef, then fish...all groups reported liking meat/fish

  Dammann and Smith, 2009;2010)
Survey with low-income women (n=448)

Favorite Food Groups

1. Meat, poultry, fish, and eggs
2. Fruits
3. Cereal, bakery, bread, rice, pasta
4. Vegetables
5. Dairy products
6. Kool-Aid, juice, fruit punch, lemonade
7. Salty snacks
8. Pop
9. Sweets
10. Fats

Food group women would buy more of if they had extra food dollars

1. Poultry
2. Vegetables
3. Fruit
4. Ground beef/pork
5. Dairy
6. Eggs
7. Sweet snack cakes
8. Kool-aid
9. Soda Pop
10. White bread
11. Chips/other salty snacks

(Dammann & Smith, 2009. 2010)
Homeless Children

- 45% of boys; 50% of girls had BMIs > 85th percentile.
- Diets of homeless children were found to be high in fat and inadequate in calcium, vitamin D, and potassium.
- Most consumed less than the Estimated Average Requirements (EARs) for vitamins A, C, & E, phosphorus, folate, and zinc. Inadequate intakes of fruit, veggies, dairy
- Homeless children reported headaches, stomachaches, constipation, and dental problems.
- 55% reported not having enough food in their home
- 25% reported going to bed hungry at night.
- Children reported overeating, eating disliked foods, & eating at friends houses as strategies to cope with getting food

(Smith and Richards, 2008; Richards and Smith, 2007)
Among low-income children

- Pediatric obesity is common
- Strategies such as overeating protect children from feeling hungry but may contribute to their obesity
- Lack of dental care
- Among Hmong children we found 8% of the youth had hypertension and it was associated with obesity

Smith and Richards, 2008; Richards and Smith, 2006; Smith and Franzen-Castle, 2012
Environment

- Low-income populations have greater exposure to less healthy, energy-dense foods (Casey et al., 2001; Drewnowski, 2004; Henderickson et al., 2006; Siega-Riz & Popkin, 2001; Morton and Smith, 2008; Richards and Smith, 2006, 2007; Giskes et al., 2011)

- Low-income populations may have less access to healthy foods (Henderickson et al., 2006; Richards and Smith, 2006)

- Less healthy foods are cheaper and more affordable (Drewnowski, 2004; Henderickson et al., 2006; Richards and Smith, 2006)
FOOD DESERTS...CREATE PROBLEMS WITH FOOD ACCESS...BOTH URBAN AND RURAL AREAS

Smith and Miller, 2011; Smith et. al., 2010; Dammann and Smith, 2010; Smith and Morton, 2009; Richards and Smith, 2006; Henderickson, Smith, and Eikenberry, 2006; Morton and Smith, 2008; Eikenberry and Smith, 2005; Eikenberry and Smith, 2004
Eikenberry and Smith, 2005; Henderickson and Smith, 2006
We need to remember that these low-income environments contain a population of people of varying sizes...lean, normal weight, overweight, and obese...

So why are some low-income, food insecure women lean/normal weight and others overweight/obese even though they live in the same neighborhoods?????
To answer this, we conducted focus groups with lean/normal weight women and overweight and obese women

- 83 participants; 58% were African American
- Differences in personal and behavioral factors were apparent
- Overweight/obese women were more inclined to overeat, stash food, and be emotional eaters.
- Lean/normal weight women communicated more nutrition knowledge and exercised more
- Both groups were food insecure, living in same low-income environments (Dressler & Smith, in press-Am J Health Promotion)
- Overweight and obese women were most influenced by cost of food and buy what is cheap (Dressler & Smith, under review)
- Overweight and obese women have greater “liking” of all food groups (Dressler & Smith, under review).
## Food Liking Ratings

<table>
<thead>
<tr>
<th>Food</th>
<th>L/N</th>
<th>Ow/Ob</th>
<th>p - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsalted butter</td>
<td>82</td>
<td>107</td>
<td>.032</td>
</tr>
<tr>
<td>Salted butter</td>
<td>82</td>
<td>109</td>
<td>.021</td>
</tr>
<tr>
<td>Healthy spread</td>
<td>84</td>
<td>110</td>
<td>.027</td>
</tr>
<tr>
<td>Spreadable fats category</td>
<td>84</td>
<td>106</td>
<td>.033</td>
</tr>
<tr>
<td>Whole wheat bread</td>
<td>102</td>
<td>128</td>
<td>.008</td>
</tr>
<tr>
<td>“Brown” bread</td>
<td>103</td>
<td>127</td>
<td>.019</td>
</tr>
<tr>
<td>Bread category</td>
<td>102</td>
<td>123</td>
<td>.005</td>
</tr>
<tr>
<td>Baked chips</td>
<td>93</td>
<td>118</td>
<td>.006</td>
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<tr>
<td>Trail mix</td>
<td>95</td>
<td>121</td>
<td>.027</td>
</tr>
<tr>
<td>Real turkey</td>
<td>115</td>
<td>139</td>
<td>.005</td>
</tr>
<tr>
<td>Healthy</td>
<td>102</td>
<td>111</td>
<td>.014</td>
</tr>
<tr>
<td>Unhealthy</td>
<td>104</td>
<td>115</td>
<td>.024</td>
</tr>
</tbody>
</table>

*Values are mean LAM scale liking responses in millimeters*

Dressler and Smith, under review
Surveys (n=330 low-income women)

- Using the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff)… depression symptoms for past 7 days as measured through 20 questions
- We found women with highest depression scores also had high food insecurity scores
- Depression was not associated with BMI
- Both lean/normal and overweight/obese women consumed less than the recommended MyPlate servings for fruits, vegetables and dairy
So can we change eating behavior?? We think we can...

- In short-term intervention, we found that we can move women from feeling financially defeated to being budget savvy (Rustad and Smith, 2012)

- We also found that short-term, 3 one hour sessions of education, improved nutrition knowledge (Rustad and Smith, under review)
Furthermore, we found increased knowledge to be associated with behavior change. For instance: Teaching about vegetable intake with a cooking demo, resulted in improved vegetable intake; Teaching about herbs and spices, how to grow and how to use, resulted in reduced salt intake and increased herb/spice intake. (Rustad and Smith, under review)...may need to be activity based.
What we’ve learned over time:

- Poor dietary habits and food poor environments can lead to poor nutritional status
- Limited access to affordable, healthy food choices can lead to overeating and obesity
- A history of food deprivation can lead to overeating and obesity
- Current hunger can lead to overeating when tasty food is available
- Children have a difficult time concentrating in school, when they are food insecure
A big thanks to Students

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Selected References (21/60)


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