Ending Childhood Hunger: The Role of School Feeding Programs

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World Hunger Map

World Hunger Map 2011

It takes only 25 US cents for WFP to give a hungry child a cup of food with all the nutrients needed for the day.

The cost of hunger to developing nations is an estimated US$430 billion per year.

The number of undernourished people worldwide is just under 1 billion – equivalent to the population of North America and Europe combined.

1/4 children in the US live in food insecure households.
Prevalence of Food Insecurity in the United States
Food Security:

The ready availability of nutritionally adequate and safe foods to an individual or household and an assured ability to acquire them in socially acceptable and sustainable ways.
Measuring Food Insecurity: *towards a standard definition*

- USDA: Household Food Security Survey and Household Food Security Survey Short Form
- WFP: Comprehensive Food Security and Vulnerability; Analysis, Emergency Food Security Assessment
- Integrated Food Security Phase Classification (IPC): Standardized tool that aims at providing a “common currency” for classifying food security
- FAO: Data on production, imports and exports of all food commodities, along with the calorie content of each food. Data on population structure as an aggregate. This varies from country to country because of different population structures. Household survey data.
Food Insecurity:

The lack of availability, access, and utilization or use of food or the uncertainty that one will be able to do so.

Hungry children are more likely to exist in food insecure households.
Consequences of Food Insecurity

- Food Insecurity
- Hunger
- Malnutrition
- Wasting
- Stunting
Hunger:
The mental and physical condition that comes from not eating enough food due to insufficient economic, family, or community resources.
Stunting:

An indicator of chronic malnutrition, calculated by comparing the height-for-age of a child with a reference population of well nourished and healthy children.
Consequences of Food Insecurity

- Stunting
- Wasting
- Malnutrition
- Hunger

Food Insecurity
Food Security and Well Being

Food Insecurity: Uncertain, insufficient, or unacceptable availability, access, or utilization of food

Livelihood Strategies → Economic & Social Resources

Management Strategies

Livelihood Strategies → Food Insecurity:

Livelihood Strategies

Economic & Social Resources

Functional Limitations

Social Context

Lack of well being

Hunger

Distress & Anxiety

Poor Dietary Intake

Poor Nutritional Status

Adverse Family & Social Interactions

Deprivation & alienation

Poor Nutritional Status

Mass General Hospital for Children

Stanford University
Malnutrition and Childhood Mortality

• 9.7 million children under five die each year in developing countries

• Malnutrition contributes to the death of over 5 million of these children
Diarrheal Disease and Malnutrition

• Diarrheal illnesses predispose children to malnutrition and growth shortfalls

• Malnutrition predisposes children to diarrheal illnesses
Vitamin and Mineral Deficiencies

Half of children suffering vitamin and mineral deficiencies are suffering from multiple deficiencies.
School cafeterias are the frontline for fostering a healthy lifestyle for children.

- Arne Duncan, US Secretary of Education
WFP School Programs

• Provide 17 million vulnerable school children in developing countries with a basic nutritious meal

• Provide take-home rations for girls to encourage families to send their daughters to school: a sack of rice and a can of cooking oil for families who send their daughter to school
Cognitive, Nutrition and Behavioral Associations with School Breakfast Consumption

- At baseline, assess relationship between:
  - hunger
  - nutritional risk
  - breakfast consumption, academics and behavior

- After offering universal school breakfast, assess relationship between changes in:
  - nutrition and breakfast consumption
  - academic/psychosocial outcomes

Boston Schools/Project Bread
Methods: *(baseline and post USBP)*

- Interview students and assess
  - nutrition *(24-hour dietary recall)*
  - hunger *(CCHIP survey)*
  - behavior *(PSC, 35 item checklist)*

- School records
  - grades, attendance, tardiness
  - school breakfast participation

- Interview parents and staff
  - demographics, child behavior, satisfaction with USBP
Baseline

(N=97)

- Age in years (range=8-12) 9.9
- Grade in school (range=4-6) 5.3
  - Female 59%
  - Minority 94%
    - African-American 57%
    - Hispanic 29%
    - Asian-American/Other 8%
- Single parent family 55%
Baseline Nutritional Risk

2+ nutrients < 50%: 29%

Kcal < 1500: 28%

2+ nutrients and/or Kcal < 1500: 33%
Baseline

Nutritional Risk by Hunger/Breakfast

Bar chart showing:
- 77% of OK (N=65) vs 31%*** of At Risk (N=32) for Home/School Breakfast Often
- 16%* of OK (N=65) vs 1.2%* of At Risk (N=32) for % Hungry (Child Rpt)

*p = p< .05
** = p< .01
*** = p< .001
Baseline
Child Functioning by Nutritional Risk

<table>
<thead>
<tr>
<th>Category</th>
<th>OK</th>
<th>At Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math Grade Average</td>
<td>2.6</td>
<td>1.8***</td>
</tr>
<tr>
<td>Overall Grade Pt Average</td>
<td>2.8</td>
<td>2.1***</td>
</tr>
<tr>
<td>Days Absent</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>Days Tardy</td>
<td>1.9</td>
<td>5.1*</td>
</tr>
<tr>
<td>Psych Symptoms (Parent Rpt)</td>
<td></td>
<td>18.8%**</td>
</tr>
<tr>
<td>Psych Symptoms (Child Rpt)</td>
<td></td>
<td>22.9%*</td>
</tr>
</tbody>
</table>

* = p< .05  ** = p< .01  *** = p< .001
Change from Baseline to End of Year
Change in Nutritional Risk by Change in Breakfast Consumption, Hunger

- **Increased School Breakfast:**
  - Same/Worse: 13%
  - Decreased: 55%

- **Decreased Hunger (Child Rpt):**
  - Same/Worse: -11%
  - Decreased: 88%*

* = p < .01
** = p < .001
Change from Baseline: Changes in Functioning by Change in Nutritional Risk

- Math Grade Average: 0.1 (Same/Worse), 0.6** (Decreased)
- Days Absent: 0.9 (Same/Worse), -3* (Decreased)
- Psych Symptoms (Child Rpt): -1.2 (Same/Worse), -3.2** (Decreased)

* = p < .05
** = p < .01
Summary of Findings

• More than one-third of students were hungry or at risk for hunger
• Hungry students: poorer grades/more symptoms of behavioral/emotional problems
• More likely to have low intake of 2 or more critical nutrients
Summary of Findings: After School Breakfast Program Implemented

- More than 2/3 children who were hungry or at risk increased their breakfast participation
  - Improved nutrient intake
  - Better math grades
  - Fewer school absences and tardiness
  - Decreased emotional/behavioral problems

- High satisfaction
  - 73% of all respondents
  - 100% of parents
  - 94% of staff
Summary: First Systematic Review of School Feeding

- 18 Randomized studies (9 lower income)
- Children fed at school:
  - Gained .39 -.71kg more over 11-19 months
  - Gained more in height
  - Attended school 4-6 days more/year (lower income)
  - Improved math scores
  - Improved short-term cognitive tasks

Kristjansson EA et al Cochrane Library CD004676. 2006
Summary

- Cognition is affected by nutritional status throughout childhood and adolescence as the central nervous system develops.
- Internal and external environmental factors, including behaviors, health and socio-economic status, interact with nutritional status to determine a child’s ability to learn and function.
- School feeding programs offer the opportunity to reduce the risk of adverse external environmental factors, support good nutrition and encourage a healthy lifestyle.
Barriers to Ending Hunger

• Conflicting government priorities
• Conflicting health priorities
• Global increase in food prices
Global Advocacy

- Improve the nutritional content of food donations
- Engage local, small-scale farmers in hunger relief efforts
- Put more income in the hands of women
- Community gardens: Farm to school
- School feeding programs
Those who care……..
A Few Global Partners

www.wfp.org
www.unicef.org
www.who.int
www.gcnf.org
www.actionagainsthunger.org
www.foodbanking.org
www.micronutrient.org
If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health.  

*Hippocrates*
Underweight:

Measured by comparing the weight-for-age of a child with a reference population of well-nourished and healthy children.
Stages of Malnutrition

Mild malnutrition:
- reduced physical activity
- lowered rates of growth

Moderate malnutrition:
- more reductions in activity
- greater impact on growth rates
- signs of wasting
- some biochemical abnormalities

Severe Malnutrition:
- all linear growth ceases
- physical activity curtailed
- marked body wasting
- clinical signs of malnutrition
Assessing Nutritional Status in Children:

Anthropometry:
- Height
- Weight
- Head circumference
- Mid-upper arm circumference

Clinical signs of malnutrition:
- Body wasting
- Hair and skin changes
- Edema

Biochemical indicators:
- Reduced serum albumin
- Iron deficiency and anemia
Hunger: An Often Invisible Health Crisis
Findings

- 73% exact agreement on hunger survey between parent and child at baseline

- 75% complete agreement between parent hunger scores at baseline and follow-up

- Excellent stability of hunger survey findings over 6 months (.56)