La Inseguridad Alimentaria y el Desarrollo de Enfermedades Crónicas

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Declaración de Intereses:

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No tengo ningún interés que declarar
Food Security exists when...

“...people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life”

1996 Rome World Food Summit
Consequences of Food Insecurity

• Poor psycho-social and mental development
• Poor physical development
• Increased morbidity
• Increased mortality
• In short, food insecurity is associated with
  • Low human capital
  • Low social capital
  • Poor national development
  • Poor planetary health
• FI inversely associated with household income, shelter and housing, and employment.

• FI associated with poor physical health and lower subjective well-being* adjusting for other living conditions.
  • FI was associated with subjective well-being in low-, middle- and high-income countries.

*Physical health was measured by asking whether the respondents “have any health problems that prevent them from doing any of the things people their age normally can do.”

For well-being respondents were asked whether or not they felt well-rested, were treated with respect, smiled or laughed a lot, learned or did something interesting, felt enjoyment, felt physical pain, felt worried, felt sad, felt stress, or felt anger on the day before the survey.
Food Security and the 2015–2030 Sustainable Development Goals: From Human to Planetary Health

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Department of Social and Behavioral Sciences and Global Health Concentration, Yale School of Public Health, New Haven, CT

Curr Dev Nutr 2017;1:e000513

HFI IS ASSOCIATED WITH STUNTING, OBESITY AND NCDs
Nutrition disparities and the global burden of malnutrition

Pérez-Escamilla et al. the bmj | BMJ 2018

Fig 1 | The double burden of malnutrition through the life cycle and across generations and shared drivers
HFI and Stunting
Mexican Children < 5 Years- 2012

Shamah-Levy et al. 2013

- FS: 11.7%
- Mild HFI: 13.1%
- Moderate HFI: 14.5%
- Severe HFI: 19%
Double Burden of Malnutrition: Simultaneous presence of stunted children under five and overweight mother in same household

Data set: 2006 Brazilian PNDS

DBM associated with severe HFI:
AOR: 2.65 (CI: 1.17–8.53)
“...severe HFI was associated with obesity risk among adult women (PR: 1.49; 95%CI: 1.17-1.90), moderate HFI was associated with excess weight among female adolescents (PR: 1.96; 95%CI: 1.18-3.27).”
TABLE 3—Association Between Food Insecurity and Body Mass Index: National Health and Nutrition Examination Survey, United States, 1999–2006

<table>
<thead>
<tr>
<th>Food Security</th>
<th>BMI &lt; 18.50 kg/m², OR (95% CI)</th>
<th>BMI 25.00–29.99 kg/m², OR (95% CI)</th>
<th>BMI ≥ 30.00 kg/m², OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure (Ref)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Marginally insecure</td>
<td>0.96 (0.51, 1.81)</td>
<td>1.03 (0.83, 1.28)</td>
<td>1.33* (1.05, 1.69)</td>
</tr>
<tr>
<td>Highly insecure</td>
<td>1.74* (1.02, 2.96)</td>
<td>0.96 (0.80, 1.16)</td>
<td>1.18 (0.99, 1.41)</td>
</tr>
</tbody>
</table>

Note. BMI = body mass index; CI = confidence interval; OR = odds ratio. OR (95% CI) controls for race, income, health insurance, and tobacco exposure.

*Reference category is the normal BMI range (18.50–24.99 kg/m²).

*P ≤ .05.

Food Insecurity and Chronic Disease\textsuperscript{1–3}

Barbara A. Laraia*
Division of Community Health and Human Development, School of Public Health, University of California Berkeley, Berkeley, CA

\begin{itemize}
\item Food insecurity among low-income families is associated with a significantly higher percentage of diabetes in community samples and studies with representative samples in the United States and Canada, especially among women.
\end{itemize}
Food Insecurity and Chronic Diseases Among American Indians in Rural Oklahoma: The THRIVE Study
Valarie Blue Bird Jernigan et al. AJPH 2017;107:441–446

• cross-sectional sample of 513 American Indian adults
• 2 questions from the six-Item Short Form of the Household Food Security Scale
• prevalence of obesity (60.7% vs 45.8%), diabetes (27.3% vs 18.8%), and hypertension (52.5% vs 42.5%) was higher among those with inadequate food quality than among those with adequate food quality
  • even after adjustment for age, gender, study site, education, and income
National Health Interview Survey data 2011-2015. Adjusted for: survey year indicators, age, gender, employment, marital status, race/ethnicity, insurance status, highest education of any adult in household, number of children, family size, and household income-to-poverty ratio. Working-age adults in households at or below 200 percent of the Federal poverty line.
Household food insecurity, diabetes and hypertension among Mexican adults: Results from Ensanut 2012

• N=32,320 adults

• Multiple logistic regression (adjusted for complex sampling design)
  • Adjusted for education, age, urban/rural, socio-economic class, health insurance, BMI

• HFI is a risk factor for self-reported T2D (women)
  • Food secure; AOR: 1.00 (ref. category)
  • Mild HFI; AOR (95%CI): 1.31 (1.06-1.62)
  • Moderate HFI; AOR (95%CI): 1.67 (1.31-2.13)
  • Severe HFI; AOR (95%CI): 1.48 (1.14-1.93)
# HFI & Fasting Blood Glucose (mg/dl) among U.S. Hispanics

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Secure (n=24)</td>
<td>145.5</td>
<td>17.4</td>
</tr>
<tr>
<td>Mild-FI (n=18)</td>
<td>170.7</td>
<td>21.3</td>
</tr>
<tr>
<td>Moderate-FI (n=21)</td>
<td>184.0</td>
<td>19.6</td>
</tr>
<tr>
<td>Severe-FI (n=17)</td>
<td>204.4</td>
<td>21.7</td>
</tr>
</tbody>
</table>

Multivariate linear regression, N=97, p=0.007; Adjusted for 6 SES and demographic confounders; model $R^2=0.23$

Perez-Escamilla et al. (2014)
Possible mechanisms

• Poor dietary quality
  ➢ high consumption of cheap energy dense and sugary foods and beverages

• Stress

• Poor sleep
Based on this evidence, the 2010 Dietary Guidelines Advisory Committee concluded that strong and consistent evidence in adults indicates that dietary patterns relatively low in energy density improve weight loss and weight maintenance.

In addition, the committee concluded that there was moderately strong evidence from methodologically rigorous longitudinal cohort studies in children and adolescents to suggest that there is a positive association between dietary energy density and increased adiposity.
Association of Household Food Insecurity with the Mental and Physical Health of Low-Income Urban Ecuadorian Women with Children

M. Margaret Weigel,1,2,3,4 Rodrigo X. Armijos,1,2,3,4 Marcia Racines,4 William Cevallos,4 and Nancy P. Castro5

• 794 women with children living in low income Quito, Ecuador, neighborhoods

• HFI was associated with poorer self-rated health, lowMHI-5 scores, mental health complaints including stress, depression, and tightness/discomfort/pain

Journal of Environmental and Public Health (2016)
Stress, Reward & Habitual Eating Pathways

- **Limbic System** (Emotions)
- **Reward Area** (NuAc) Dopamine, Opioids (Motivation, Pleasure)
- **Basal Ganglia** (Habit)
- **PFC** (Regulation, Mindfulness)

Adapted from: Epel, Tomiyama, Dallman, 2010, in Brownell & Gold (Eds) Food & Addiction

Slide -courtesy of Barbara Laraia
Standardized Path Diagram of Parallel Multiple Mediation Model between Food Insecurity and Insulin Resistance

Bermúdez-Millán et al. (under review)

HOMA = homeostatic model assessment of insulin resistance; WHR=waist-to-hip ratio; hsCRP=high sensitivity c-reactive protein
Experiencing HFI was associated with greater psychological distress and worse sleep quality (p< 0.05).

Depressive symptoms, anxiety symptoms, and diabetes mellitus distress mediated the relation between HFI and worse sleep quality adjusting for age, education, income, marital status, and employment status.
After adjusting for potential confounders, a significant association was found between severe household food insecurity and getting less than the recommended 7–8 h of sleep [adjusted odds ratio (AOR) = 1.83, 95% CI = 1.37–2.43].

Compared with food secure households, odds of poor sleep quality increased with level of severity

- AOR = 1.27 for mild; 1.71 for moderate; and 1.89, 95 for severe household food insecurity.
CONCLUSION

SDGs

<table>
<thead>
<tr>
<th>Economic growth/Equity</th>
<th>Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietary guidelines</td>
<td>Policies/programs</td>
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</table>

Climate change
Stable food supply
Food affordability

Monitoring & Evaluation

Planetary Health

Human Health

| Healthier diets | Infections | Chronic Diseases | Mental Health |

| Quality of life, Productivity | Society stability | Environmental footprint |

Growing evidence indicates that the vulnerability to NCDs is largely set during the first 1,000 days.

