Coping with Food InSecurity: introducing the Sociotype

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Tel Aviv, July, 2017

Food Security is a Fundamental Human Right

This Pulitzer prize photo was taken during the Sudan famine in 1994. The child is crawling to a UN food camp some kms away. The vulture is waiting for him to die, to eat. No one knows what happened to the child. The photographer, Kevin Carter left immediately after. He committed suicide 3 months later from depression.

Food Security & Public Health Nutrition

A Well-Fed Nation is a Healthy Nation is a Productive Nation


Food and Nutrition Security “exists when all people at all times have:
- physical, social and economic access to food,
- which is safe and (is)...sufficient quantity and quality
- to meet their dietary needs and food preferences,
- and is supported by an environment of adequate sanitation, health services and care,
- allowing for a healthy and active life”

-Utopian....
-Note: there is enough food in the world to feed everyone...

Outline

Lecture 1
1. What is Food Security?
2. Sociotype and Coping with Food Insecurity

Lecture 2
1. POSITIVE DEVIANCE: How it changed my life...
2. Sustainable Diets & Mediterranean Lifestyle
3. Intervention studies in Schools
4. Socio-Cultural Aspects
The concept of food security implies that:

1. Production & distribution of food are **sustainable**
2. Production & consumption of food are grounded in, and governed by, **social values** that are:
3. **Just**, equitable, morally & ethically sound
4. Food is nutritionally adequate, & personally & culturally acceptable
5. Food is obtained (& consumed) in a manner that upholds basic human dignity

*World Food Day cited in Understanding Food Security through Community Mapping, 1995*
Ways to solve the problem

1. Increasing agricultural production by modern methods of farming, since most of the world’s poorest people depend on it as the main source of their income (Availability)

2. Maldistribution: raising food production levels at a rate to keep pace with population increases (Availability, Accessibility)

3. Faster, less expensive forms of national & international communication & transportation to improve commerce (Availability, Accessibility)

4. Nutritional education, especially WOMEN + Empowerment (Accessibility, Utilization, Stability)

Ways to solve the problem

5. Reducing rural poverty is a major target (Accessibility, Stability)

6. Food fortification & supplementation (Accessibility, Utilization)

7. Control of communicable & non-communicable diseases (Utilization)

8. In parallel, it is important to control birth rate (All dimensions) (the elephant in the room...)

This is not an easy task & involves social, ethical, health, economic & political considerations – ramifications for EVOLUTION

Examples of Implementation Tools in Food & Nutrition Security at different social levels

<table>
<thead>
<tr>
<th>Social Level</th>
<th>Availability</th>
<th>Accessibility</th>
<th>Adequate Utilization</th>
<th>Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macro</td>
<td>Agriculture &amp; Trade policies</td>
<td>Price policy</td>
<td>Safe Motherhood Programs</td>
<td>Saving &amp; Loan Policy</td>
</tr>
<tr>
<td></td>
<td>Birth control Programs</td>
<td>Food Stamps</td>
<td></td>
<td>Micro Finance</td>
</tr>
<tr>
<td>Meso</td>
<td>Small scale irrigation projects</td>
<td>School-Feeding Programs</td>
<td>Measles, Polio immunization campaigns</td>
<td>Community Planning Committees</td>
</tr>
<tr>
<td>Micro</td>
<td>Use of Fertilizer</td>
<td>Breast Feeding Coaching</td>
<td>Latrine Construction</td>
<td>Food Storage</td>
</tr>
</tbody>
</table>


Copenhagen – Global Challenges: The Skeptical Environmentalist – Bjorn Lomborg

To Prioritize the Top 10...

- *Access to education*
- *Malnutrition & hunger*
- *Clean water - Sanitation*
- *Climate change*
- *Communicable diseases*
- *Conflicts*
- *Financial instability*
- *Subsidies & trade barriers*
- *Governance & corruption*
- *Migration*

*Relate to Food Security*

The Rankings by Opportunities:

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very good</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Communicable diseases</td>
</tr>
<tr>
<td>2</td>
<td>Malnutrition</td>
</tr>
<tr>
<td>3</td>
<td>Subsidies &amp; trade</td>
</tr>
<tr>
<td>4</td>
<td>Communicable diseases</td>
</tr>
<tr>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Malnutrition</td>
</tr>
<tr>
<td>6</td>
<td>Sanitation &amp; water</td>
</tr>
<tr>
<td>7</td>
<td>Sanitation &amp; water</td>
</tr>
<tr>
<td>8</td>
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</tr>
<tr>
<td>9</td>
<td>Governance</td>
</tr>
<tr>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Migration</td>
</tr>
<tr>
<td>11</td>
<td>Malnutrition</td>
</tr>
<tr>
<td>12</td>
<td>Communicable diseases</td>
</tr>
<tr>
<td>Bad</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Malnutrition</td>
</tr>
<tr>
<td>14</td>
<td>Migration</td>
</tr>
<tr>
<td>15</td>
<td>Climate change</td>
</tr>
</tbody>
</table>

Important non-economic programmes – Reducing Conflict, Fighting Corruption
Coping with Food Insecurity: the role of the Sociotype

Definition of Food Insecurity

Food Insecurity exists whenever the availability of nutritionally adequate and safe foods, or the ability to acquire acceptable foods in socially acceptable ways, is limited or uncertain


Vulnerable Groups for FOOD INSECURITY

- Victims of Natural Disasters
- Victims of Conflict
  - IDPs, Refugees, War victims
- Migrant Workers & Families
- Marginal Populations in Urban Areas
  - Unemployed, Homeless, Orphans, Street Children
- At-risk social groups
  - Minorities, Illiterate, Patients, Prisoners, Addicts
- Low-Income Households, 1- parent families
- Dependents
  - Servants, Elderly, Handicapped, Special needs, Pregnant & Nursing women, CHILDREN

Introducing the Sociotype

Q: How do we COPE with “LIFE” in general and chronic disease and Food Insecurity in particular?

A: Well, it all depends on your SOCIOTYPE......

Multi-Disciplines: Anthropology, Medicine, Nursing, Physiology, Psychology, Sociology, & more...

Nutrition & Fitness

Background: Sociotype & Coping

Sociotype x Genotype determines Phenotype

Phenotype

Genotype

Nutrition, Epigenetics, mRNA...

Relatively Unchanging Input

Context

Individual

Relatively Unchanging Input

Constantly Changing Inputs

PHENOTYPE: Observable Characteristics: Behavior Patterns: Personality: e.g. COPING

Why you are, how you are & Why you do, what you do...

in utero ➔ Childhood ➔ Adolescence ➔ Adult ➔ Middle Age ➔ Old Age

EXPERIENCE

Berry EM. The role of the sociotype in managing chronic disease: Integrating bio-psycho-sociology with systems biology. Medical Hypotheses 77: 610, 2011


EB:
Food Insecurity and Sociotype

Elliot M Berry
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1. Individual / Health
   Intra-personal
   • Nutrition, Growth & Development
   • Physical Health & Well Being
   • Psychological / Mental / Emotional Health
     Sense of Humor
   • Spiritual Belief System(s)
   • Coping strategies throughout the life cycle for disease, aging & misfortune

2. Relationships
   Inter-personal
   Family:
   • With Parents
   • With Siblings
   • With Cousins
   • With Spouse (mate selection)
   • With Children
   Friends: Social Networks
   Work and Strangers...
   Sexual Partners / Lovers

3. Context - Community
   Education
   Employment
   Economic Situation
   Environment
   • Home
   • Leisure Time
   • Work
   Political System
   Migrants / Strangers
   Ideological Beliefs & Societal values

Some questions for Sociotypic research: from the 3 Domains

INIVIDUAL / HEALTH
   • How would you have been different if 5cms ↑ or ↓ in height?
   • How to live with Special Needs, blindness, stuttering, deformity?
   • Are you hungry in your Head or your Stomach?
   • How to cope with Aging, Chronic Disease - Diabesity, CVA, IBD, Arthritis, Colostomy, Post-Transplant or post Traffic accident?

RELATIONSHIPS
   • At what age do you stop trying to please your parents?
   • What determines how we choose our partners?
   • Do people change?
   • How do families cope with a sick child?
   • How to deal with, Divorce, Bereavement (child)?
   • How to care for a parent/spouse with dementia?

CONTEXT
   • How to deal with Job Dismissal, Retirement?
   • How to deal with Economic crises, Wars, Natural Disasters?

Questions may overlap domains, Answers may change with time, & are NOT given by RCTs
Practical Example of Sociotype in Action:
A kid falls over in the playground & cried.

- "Oh it’s really nothing, just a scratch. Be a MAN - Boys don’t cry..."
- "I know it hurts, Let me kiss it better. Let’s clean it with water, put on a plaster & you will be just fine...."
- "It’s MY fault, I should not have let you go wild. Oh how terrible! We must go to the doctor immediately, and get anti-tetanus, then the ER and a Hematologist...."
- "It’s YOUR fault for not being more careful...."

Which Mother said what?
Russian, American, Nordic, Jewish, English, Polish, Other... (Affection & Justification)

Nutritional & Sociotypic Influences through the life cycle in Health & Disease

Body weight (= Input [FOOD] – Output [ACTIVITY]) according to economic status

Development & SES

Coping & Mastery skills are lower in less educated, the poor & the ill: data from 1328 subjects

Berry in preparation 2016
Correlations between the Sociotypic Domains and Coping in Total Population (n = 1296)

\[
\begin{align*}
\text{Context} & \quad r = 0.383 \\
\text{Sociotype Coping Score} & \quad r = 0.548 \\
\text{Individual / Health} & \quad r = 0.388
\end{align*}
\]

The influence of Sociotypic Domains on Coping in 572 Men and 724 Women

<table>
<thead>
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<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual / Health</td>
<td>35.8%</td>
<td>26.6%</td>
</tr>
<tr>
<td>Relationships</td>
<td>19.9%</td>
<td>14.5%</td>
</tr>
<tr>
<td>Context</td>
<td>19.6%</td>
<td>16.2%</td>
</tr>
<tr>
<td>Total</td>
<td>75.3%</td>
<td>57.3%</td>
</tr>
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Berry et al, submitted 2016

Some questions for Sociotypic research:

**INDIVIDUAL / HEALTH**
- How to keep up food quality and prevent malnutrition?
- How to deal with constant Hunger?
- How to eat previously unacceptable food – culture / religious taboos?

**RELATIONSHIPS**
- How to decide to whom to distribute the Food?
- How to cope if someone falls ill?

**CONTEXT**
- How to borrow or get credit?
- How to beg?
- Consequences of economic hardship?

*Answers: CHANGE with TIME, & not given by RCTs*

Coping strategies for Food Insecurity classified by Sociotypic Domain

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<td><strong>Limit portion size at mealtimes</strong></td>
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Unacceptable Behaviors...

Steal Trash cans Sex 4 Food
Food Insecurity and Sociotype

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The Sociotype & Coping with Food Insecurity

INDIVIDUAL / HEALTH:
"Tell me what YOU eat and I will tell you what YOU are"

RELATIONSHIPS:
"Tell me how a FAMILY eats and I will tell you how it FUNCTIONS"  

CONTEXT:
"Tell me how a NATION eats and I will tell you its VALUES"

Do kids go to bed hungry??  
= COPING with FOOD INSECURITY & SOCIAL JUSTICE & SUSTAINABILITY

Four Final Thoughts:
"Tell me your SOCIOTYPE" & I will tell you How you COPE...

FOOD SECURITY (Public Health):
Food should be AVAILABLE & ACCESSIBLE & ADEQUATE & ENJOYABLE for ALL: MEDITERRANEAN LIFESTYLE

NUTRITION:
"MODERATION in all things, including MODERATION" (David Berry z"l)

SOCIOTYPE:
...It is more important what comes OUT of your mouth than what goes IN..... (Matthew 15.11)

COPING: (3-fold cord)
How you cope is the life-long interaction between your Genotype ➔ Phenotype ➔ SOCIOTYPE

Methodology for Development of a Composite Index

• Purpose of Index: Study Population, children, pregnant women, elderly... Food Security
• Choice of indicators: Standardized collection, available, valid, reliable, frequency, cost...
• Scoring for each component
• Weighting for each component: PCA, Intra dimension
• Aggregation of scores assigned to components: Inter dimension weighting
• Summation & Total Score
• Test & Validate

building a
Food and Nutrition
(Composite)
Security Index

FaNSI

after Kourlaba & Panagiotakous, 2009
**Criteria for selecting indicators**

1. **Relevant**: to the needs of potential users
2. **Valid**: is the best scientific indicator currently available to answer the question.
3. **Data** that are Accurate, Accessible, Available over time and responsive to change
4. **Understandable** and easy to interpret
5. **Comparable**: with indicators developed in other countries and Visually Graphic
6. **Cost-effective**: for repeated measures and time trends

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**Indicators for FAO Food Security Index**

**Availability**

- Average Dietary Energy Supply Adequacy
- Average Value of food Production
- Share of Dietary Energy Supply derived from Cereals, Roots and Tubers
- Average Protein Supply
- Average Supply of Protein of Animal Origin

FAO. *The State of Food Insecurity in the World 2014*

**Access**

- Percent of Paved Roads over Total Roads
- Road Density
- Rail lines Density

**Utilization**

- Gross Domestic Product per capita (purchasing power equivalents)
- Domestic Food Price Index
- Prevalence of Undernourishment
- Share of Food Expenditure of the Poor*
- Depth of Food Deficit*
- Prevalence of Food Inadequacy*

FAO. *The State of Food Insecurity in the World 2014*

**Stability/ Vulnerability**

- Cereal Import Dependency Ratio
- % of Arable Land equipped for Irrigation
- Value of Food Imports over Total Merchandise Exports

**Political Stability and absence of Violence/ Terrorism**

- Domestic Food Supply Volatility
- Per capita Food Supply Variability
- Per capita Food Production Variability*

FAO. *The State of Food Insecurity in the World 2014*

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Weights assigned to the indicators in the FaNSI

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator weight on each sub-dimension (from PCA)</th>
<th>Indicator weight on each food security dimension</th>
<th>Indicator weight on the FaNSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Dietary Energy Supply Adequacy</td>
<td>16%</td>
<td>33%</td>
<td>6%</td>
</tr>
<tr>
<td>Average Value of food Production</td>
<td>16%</td>
<td>33%</td>
<td>6%</td>
</tr>
<tr>
<td>Share of Dietary Energy Supply derived from Cereals, Roots and Tubers</td>
<td>16%</td>
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</tbody>
</table>
Building a Composite Index for Food and Nutrition Security (FaNSI)

Dimension Score

Avail

Access

Util

Stab

The inter-dimensional weightings for food security according to the affiliation of 187 respondents

Distribution of FaNSI by group

178 Countries in 2012

FaNSI and its dimensions: examples from different groups

What does this say about Malnutrition??

Very Low Food Security
Low Food Security
Medium Food Security
High Food Security
Very High Food Security