NUTRITION
Challenges & Opportunities

Links to Human Capital, the Health System and NCDs

Meera Shekar, Global Lead, Nutrition
Kyoko Okamura, Nutrition Specialist
World Bank Group
Human Capital Index: The Story

Three ingredients reflect building blocks of the next generation’s human capital:

**SURVIVAL**
Will children born today survive to school age?

**SCHOOL**
How much school will they complete and how much will they learn?

**HEALTH**
Will they leave school in good health, ready for further learning and/or work?

“How much Human Capital can a child born today expect to acquire by age 18, given the risks to poor health and poor education that prevail in the country where she lives?”
Nutrition is a key component of the human capital index (HCI)

**LINKS WITH NUTRITION**

**SURVIVAL TO AGE FIVE**
(Under-five mortality U5MR)

**QUALITY OF LEARNING**
Expected years of school learning

**HEALTH**
Stunting rate: Fraction of kids under 5 more than 2 reference standard deviations below median height for age

Adult survival rates (ASR): Fraction of 15-year-olds who survive to age 60

**UNDERNUTRITION**
Underlies 45% of U5MR

**STUNTED/ANEMIC CHILDREN LEARN LESS**
and are more likely to drop out of school;
Iodine deficient kids lose up to 13 IQ points

**STUNTING** is a key marker of undernutrition

**RISING OBESITY RATES** contribute to NCDs and lowers ASRs
Good nutrition in the first 1,000 days is critical for brain development and for building human capital.
Investments in nutrition during the first 1000 days build human capital and boost prosperity

Early SCHOOLING
nutrition programs can increase school completion by one year

EARNINGS
Early nutrition programs can raise adult wages by 5-50%

POVERTY
Children who escape stunting are 33% more likely to escape poverty as adults

ECONOMY
Reductions in stunting can increase GDP by 4-11% in Asia & Africa

Globally, ~149M children are chronically undernourished (stunted)
Stunting, anemia, and other adverse malnutrition outcomes are a widespread problem

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“Stunting” is an indicator of chronic undernutrition. Childhood stunting is associated with reduced school attainment and reduced adult wages, thus making them less likely to escape poverty as adults.

Notes: Stunting in children aged under 5 years ≥20%; anemia in women of reproductive age ≥20%; overweight (BMI ≥25) in adult women aged ≥18 years ≥35%. Based on data for 141 countries.
Simultaneously Obesity is rising dramatically around the globe—with over half of adults overweight or obese

Source: Shekar et al. 2020. *Obesity: Health and Economic Consequences of an Impending Global Challenge*
Obesity is a pressing problem no matter where you live.

>70% of people who are overweight/obese live in LOW OR MIDDLE INCOME COUNTRIES

55% of the rise in overweight / obesity is in RURAL AREAS.

Obesity increases risk of disability and death, and drives noncommunicable disease burden

People with obesity are at increased risk for:

- All-causes of death (mortality)
- Hypertension (high blood pressure)
- Dyslipidemia (high LDL cholesterol, low HDL cholesterol, or high levels of triglycerides)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis (breakdown of cartilage and bone within a joint)
- Sleep apnea and breathing problems
- Many types of cancer
- Low quality of life
- Mental illnesses such as clinical depression, anxiety, and other mental disorders
- Body pain and difficulty with physical functioning

Source: CDC, The Health Effects of Overweight and Obesity; Nyberg et al. Obesity and loss of disease-free years owing to major non-communicable diseases: a multicohort study, 2018, available from https://www.thelancet.com/action/showPdf?pii=S2468-2667%2818%2930139-7
The rise is primarily driven by increasing calories consumed as a part of unhealthy diets and decreased physical activity.
Consumption of sodium (salt), sugar, saturated fat, and trans fat are also above recommended levels in every region

### Sodium

**WHO recommended level:** < 2.0 grams per day

<table>
<thead>
<tr>
<th>Location</th>
<th>Mean sodium consumed (g/day)</th>
<th>Mean systolic blood pressure (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worldwide</td>
<td>4.0</td>
<td>134</td>
</tr>
<tr>
<td>Central Asia / Eastern and Central Europe</td>
<td>4.5</td>
<td>141</td>
</tr>
<tr>
<td>East / Southeast Asia</td>
<td>4.1</td>
<td>132</td>
</tr>
<tr>
<td>Latin America / Caribbean</td>
<td>3.2</td>
<td>135</td>
</tr>
<tr>
<td>North Africa / Middle East</td>
<td>3.9</td>
<td>135</td>
</tr>
<tr>
<td>South Asia</td>
<td>3.7</td>
<td>132</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>2.5</td>
<td>141</td>
</tr>
</tbody>
</table>

**2010 data**

Between 25-200% more than recommended consumed on average

### Sugar

**WHO recommended level:** < 10% of total energy intake

**WHO suggested level:** < 5% of total energy intake

<table>
<thead>
<tr>
<th>Location</th>
<th>Mean sugar consumed (g/day)</th>
<th>Mean daily calories from sugar</th>
<th>% of calories from sugar for a 2000 calorie diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worldwide</td>
<td>60</td>
<td>241</td>
<td>12%</td>
</tr>
<tr>
<td>Africa</td>
<td>42</td>
<td>168</td>
<td>8%</td>
</tr>
<tr>
<td>Asia</td>
<td>50</td>
<td>202</td>
<td>10%</td>
</tr>
<tr>
<td>Latin America</td>
<td>105</td>
<td>422</td>
<td>21%</td>
</tr>
<tr>
<td>Europe</td>
<td>101</td>
<td>402</td>
<td>20%</td>
</tr>
</tbody>
</table>

All regions exceed suggested levels and most exceed recommended levels

Source: Mozaffarian et al. Global sodium consumption and death from cardiovascular causes. NEJM. 2014.; IHME; OECD

Note: Calculations assume 4 calories per gram of sugar
High blood pressure, driven by sodium consumption, is the leading risk factor for mortality globally

<table>
<thead>
<tr>
<th>1990 rank</th>
<th>2019 rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Child and maternal malnutrition</td>
<td>1. High systolic blood pressure</td>
</tr>
<tr>
<td>2. High systolic blood pressure</td>
<td>2. Tobacco</td>
</tr>
<tr>
<td>3. Tobacco</td>
<td>3. Dietary risks</td>
</tr>
<tr>
<td>4. Air pollution</td>
<td>4. Air pollution</td>
</tr>
<tr>
<td>5. Dietary risks</td>
<td>5. High fasting plasma glucose</td>
</tr>
<tr>
<td>6. Unsafe water, sanitation, and handwashing</td>
<td>6. High body-mass index</td>
</tr>
<tr>
<td>7. High LDL cholesterol</td>
<td>7. High LDL cholesterol</td>
</tr>
<tr>
<td>8. High fasting plasma glucose</td>
<td>8. Kidney dysfunction</td>
</tr>
<tr>
<td>9. High body-mass index</td>
<td>9. Child and maternal malnutrition</td>
</tr>
<tr>
<td>10. Alcohol use</td>
<td>10. Alcohol use</td>
</tr>
<tr>
<td>12. Non-optimal temperature</td>
<td>12. Unsafe water, sanitation, and handwashing</td>
</tr>
<tr>
<td>14. Other environmental risks</td>
<td>14. Other environmental risks</td>
</tr>
<tr>
<td>15. Low physical activity</td>
<td>15. Unsafe sex</td>
</tr>
<tr>
<td>16. Unsafe sex</td>
<td>16. Low physical activity</td>
</tr>
<tr>
<td>17. Drug use</td>
<td>17. Drug use</td>
</tr>
<tr>
<td>18. Low bone mineral density</td>
<td>18. Low bone mineral density</td>
</tr>
<tr>
<td>19. Intimate partner violence</td>
<td>19. Intimate partner violence</td>
</tr>
</tbody>
</table>

Source: IHME available from https://vizhub.healthdata.org/gbd-compare/
We now face a double burden of malnutrition.

Source: Shekar et al. 2020. *Obesity: Health and Economic Consequences of an Impending Global Challenge*

Data sources: Stunting estimates from Joint Malnutrition Estimates and overweight/obesity rates from NCD-RisC estimates.
Covid-19 has further aggravated this situation globally

Covid-related disruptions

Disruptions in supply chains leading to increased food prices

Economic impact on incomes, especially among the poor

Disruptions in health / nutrition services and lifestyle changes such as sedentarism due to lockdowns

Impacts

Malnutrition increases risk of Covid-19
- Both undernutrition and obesity associated with significant reductions in immune function and greatly increased susceptibility to Covid-19

Obesity exacerbates Covid-19*
- Obesity increases COVID-related death by 48%
- Hospitalization by 113%
- ICU admission by 74%

Covid-19 exacerbates obesity
- Major shifts in food purchasing patterns; in most regions, rapid increases in consumption of both ultra-processed food and less-nutritious cheaper foods from vendors, stalls, and home cooking leading to weight gain
- Large decreases in physical activity globally both because of Covid-related restrictions and increased psychological and economic stress due to isolation and loss of active employment

Source: Popkin et al. 2020; * Based on pre-delta variant analyses
Without global investment, average economic losses due to overweight and obesity are predicted to double.

Available at: https://data.worldobesity.org/publications/
Investing in nutrition is not only a moral imperative—it is an economic imperative

**Stunting costs to individuals & society**
Stunting results in tangible income losses, impacting a country’s human capital and economic activity

In Ethiopia, Nepal and Pakistan, private sector workers lose significant personal income due to stunting...

<table>
<thead>
<tr>
<th>Country</th>
<th>Average monthly income lost (USD) per stunted worker</th>
<th>Total monthly income lost for private sector workforce (USD millions)</th>
<th>Total annual income lost for private sector workforce (USD billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>$9-$21</td>
<td>$214-$475</td>
<td>$2.6-$5.7</td>
</tr>
<tr>
<td>Nepal</td>
<td>$20-$29</td>
<td>$87-$125</td>
<td>$1.05-$1.49</td>
</tr>
<tr>
<td>Pakistan</td>
<td>$18-$26</td>
<td>$620-$885</td>
<td>$7.4-$10.6</td>
</tr>
</tbody>
</table>

Source: Akseer et al, 2022 (EClinMed; in-press)
Financing nutrition – the mantra

MORE $ FOR NUTRITION

MORE NUTRITION FOR THE $ SPENT

Scale Up & Sustain

Efficient Effective Equitable

ACCOUNTABILITY

WHA Nutrition Targets

SDG2

PROTECT AND INVEST in people
Financing nutrition – the mantra

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ACCOUNTABILITY

WHOA Nutrition Targets

PROTECT AND INVEST in people
Nutrition is a multi-sectoral agenda with many financing levers
Good nutrition is a foundation for UHC and we need to optimize health system levers for nutrition

- **Nutrition services less prioritized in UHC** despite the high burden on the health systems
- **Time to reposition nutrition** in global and national actions to achieve UHC
- **Insufficient focus on ‘HOW’** while we know ‘WHAT’ and ‘WHY’

‘How’ to deploy health system levers and resources to deliver quality nutrition services?

**Global opportunities**

- **Health Information Systems**
  - Ensure routine nutrition data collection integrated into HIS

- **Access to Essential Medicines**
  - Ensure essential nutrition-related commodities/products are available and affordable

- **Health Workforce**
  - Develop capacity of health workers to deliver quality and integrated nutrition services across the life course

- **Health Service Delivery**
  - Increase effective coverage of essential nutrition actions through current service delivery platforms, focusing on those most left behind

- **Health System Financing**
  - Improve public health financing for a package of high-impact nutrition interventions, particularly at PHC level

- **Leadership and Governance**
  - Integrate high impact nutrition interventions within multisectoral, multi-stakeholder national programs

Source: Adapted from WHO (2019)
Agriculture and Social Protection sectors offer opportunities to leverage financing for nutrition

**Agriculture**
- Food AND nutrition security interventions
- Re-purposing agrifood subsidies/support
- Impactful investment in Nutrition-Sensitive Agriculture (e.g. bio-fortification)

**Social Protection**
- “Cash+”: conditional or unconditional cash transfers linked to nutrition services/SBCC
- Targeting of nutritionally vulnerable

**Peru:**
Junto (CCT program) linked to growth promotion and other key evidence-based health and nutrition services likely influenced reduction of child stunting (as a demand-side incentive)

**Myanmar:**
CCT program linked to nutrition service uptake and supported by SBCC reduced stunting

**Pakistan:**
Unconditional CT with Lipid-based Nutrition Supplements and SBCC had an impact on stunting
Financing nutrition – the mantra

MORE $ FOR NUTRITION

Scale Up & Sustain

ACCOUNTABILITY

MORE NUTRITION FOR THE $ SPENT

Efficient Effective Equitable
Focusing on quality and evidence like the global investment framework for nutrition helps to achieve better outcomes.

- Improving nutrition for pregnant mothers
- Improving child nutrition, including micronutrient supplementation
- Pro-breastfeeding social policies & National breastfeeding promotion campaigns
- Improving feeding practices, including breastfeeding
- Staple food fortification
- Iron and folic acid supplementation for non-pregnant women

Examples of available tools:

- **Nutrition-Responsive Public Financial Management (PFM)** to assess a country’s nutrition public expenditure and its link to improved nutrition outcomes.

- The **Optima Nutrition tool** to optimize allocation of resources to priority interventions that can maximize impact.

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A Guiding Framework for Nutrition Public Expenditure Reviews (World Bank, 2022)

Optima Nutrition Learning Tool
Cost effective evidence-based population-level interventions also exist for addressing unhealthy diets

**WHO Best Buys**
Highly cost-effective and feasible in LMICs

- Reduce salt intake in food
- Replace trans fat with polyunsaturated fat
- Raise public awareness through mass media on diet and physical activity

**A package of impactful interventions**

- **TAXING** unhealthy foods, sugar-sweetened beverages, and subsidizing healthy foods
- **FRONT-OF-PACKET LABELS** to reduce consumption of ultra-processed foods
- **SETTING NUTRIENT TARGETS** (e.g., sodium, sugar) to encourage product reformulation
- **LIMITING ACCESS TO AND MARKETING** of unhealthy foods to children and adolescents
- **WORKING WITH PUBLIC INSTITUTIONS** to enhance the nutritional quality of food service and procurement
- **IMPLEMENTING MASS MEDIA CAMPAIGNS** to promote healthy diets

Source: WHO Best Buys
60+ countries / areas have implemented sugar sweetened beverage (SSB) taxes around the world

**National / sub-national opportunities**

**Americas:**
- British Columbia, Canada
- Newfoundland and Labrador, Canada
- USA (8 jurisdictions)
- Bermuda
- Mexico
- Dominica
- Barbados
- Panama
- Ecuador
- Peru
- Chile

**Europe:**
- Finland
- Latvia
- United Kingdom
- Isle of Man
- Ireland
- Poland
- Belgium
- France
- Hungary
- Spain
- Portugal
- St Helena

**Western Pacific:**
- Philippines
- Brunei
- Cook Islands
- Fiji
- French Polynesia
- Kiribati
- Marshall Islands
- Nauru
- New Caledonia
- Niue
- North. Mariana Islands
- Samoa
- Tonga
- Tuvalu
- Vanuatu
- Wallis and Futuna

**Middle East & Southeast Asia:**
- Israel
- Saudi Arabia
- Bahrain
- Qatar
- United Arab Emirates
- Oman
- India
- Thailand
- Malaysia
- Maldives

**Africa:**
- Morocco
- Nigeria
- Mauritius
- Seychelles
- South Africa

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90+ countries have implemented salt reduction efforts (mostly high- and upper-middle-income countries to date)

- 96 countries with salt reduction initiatives in place, mostly high- and upper-middle-income

- Implementation often multi-pronged

- Most common strategies globally:
  - Interventions in settings, especially schools (74 countries)
  - Reformulation through engagement with food industry (64 countries)
  - Consumer education (50 countries)
  - Front-of-pack labelling schemes (48 countries)
  - Taxation (5 countries)

Source: Santos et al. A systematic review of salt reduction initiatives around the world: a mid-term evaluation of progress towards the 2025 global non-communicable diseases salt reduction target. Adv Nutr 2021; 12:1768-1780; * Note: 1 country unclassified
Many countries have implemented mandatory or voluntary front-of-package labels

<table>
<thead>
<tr>
<th>MANDATORY</th>
<th>MANDATORY/VOLUNTARY</th>
<th>TO BE IMPLEMENTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>Finland</td>
<td>Israel</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Mexico</td>
<td>Uruguay</td>
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<td>Iran</td>
<td>Thailand</td>
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<td>Peru</td>
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<tr>
<td>Sri Lanka</td>
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<table>
<thead>
<tr>
<th>VOLUNTARY</th>
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</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Denmark</td>
<td></td>
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<tr>
<td>Australia</td>
<td>France</td>
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<td>Belgium</td>
<td>Iceland</td>
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<tr>
<td>Brunei Darussalam</td>
<td>Lithuania</td>
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<tr>
<td>Czech Republic</td>
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</table>

Chile has taken a multi-pronged approach to obesity prevention.

**NUTRIENT PROFILING IDENTIFIES FOODS HIGH IN:**
- Added **SUGAR**
- Added **SODIUM**, or
- Added **SATURATED FAT AND ENERGY DENSITY**

**FRONT-OF-PACKAGE WARNING LABELS**

**MARKETING RESTRICTIONS**
- **RESTRICTED ADVERTISEMENT**
  - Complete advertisement ban from 6.00am to 10.00pm in TV and cinema
  - Regulating advertisements targeting children
- **RESTRICTIONS ON SALES AND ADVERTISEMENT IN SCHOOL PREMISES**

**FUTURE TAXATION**

Source: Shekar et al. 2020. *Obesity: Health and Economic Consequences of an Impending Global Challenge*
Countries with high-level commitments and a focus on data, evidence, and results have made progress – like Peru.

- High-level political commitment
- Intense media coverage to build demand for key nutrition interventions and change social norms
- Focused and results-based financing for key interventions; strong implementation capacity
- Incentive systems for quality improvement and monitoring
- Integrating nutrition into social protection schemes

National / sub-national opportunities

PROTECT AND INVEST in people
Senegal was the only country in Africa that met the Nutrition MDG, at a time when economic growth was stalling

**Strong Leadership and Commitment**
Unit for the Fight Against Malnutrition (CLM) with authority & resources

**Multi-sectoral Strategy**
Evidence-based interventions
Decentralized management & service delivery via NGOs;
Strong public communications
Strong local government support
Community mobilization (>10,000 volunteers)

**Financing for Nutrition**
Two rounds of WB support
Scale-up of high-quality services
Domestic budgets and other donors’ support
What are the priority food and nutrition actions in crises?

Maintain essential health and nutrition services along the life course
- Prevention & treatment of severe malnutrition
- Community delivery platform

Increase access to healthy and diverse foods
- Local supply chains for nutrient-rich foods
- Policy actions: taxation/regulations on ultra-processed foods

Invest in Nutrition-sensitive social protection programs
- Nutritional vulnerability monitoring
- Ensuring quality of diets in cash/food transfer programs

Enhance Community engagement, communication and supportive care
- Community outreach with essential nutrition actions
- National communications plan
Additional resources:

Guiding Framework for Nutrition Public Expenditure Review
https://openknowledge.worldbank.org/handle/10986/37391

An allocative efficiency analysis tool: "Optima Nutrition"

Detailed policy recommendations on obesity
Thank you!

www.worldbank.org/humancapital
humancapital@worldbank.org
#INVESTinPeople