Designing Healthy Diets

Global dietary patterns and dietary guidelines: is there a global healthy diet?

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Overall healthy dietary pattern score for adult men and women (Imamura et al., 2015)
Healthy foods: fruits, vegetables, legumes, fish, nuts/seeds, whole grains, milk, PUFA, plant Omega-3, fiber

Unhealthy foods: unprocessed red meats, processed meats, sugar-sweetened beverages, saturated fat, trans fat, dietary cholesterol, sodium
Adult Consumption of Fruits in 2010 (Micha et al, 2015)
Adult Consumption of Vegetables (including legumes) in 2010 (Micha et al, 2015)
Adult Consumption of Whole Grains in 2010 (Micha et al, 2015)
Adult Consumption of Unprocessed Red Meats in 2010 (Micha et al, 2015)
Adult Consumption of Processed Meats in 2010 (Micha et al, 2015)
Global beverage consumption data among adults in 2010 (Singh et al 2015)

A. Sugar-sweetened beverages

B. Fruit juice

C. Milk
Sodium intakes by age and region in 2010 (Powles et al 2013)

Recommended limits are < 2 g/d Na (<4.75 g/d salt) (WHO) or < 1.5 g/d Na (< 3.5 g/d salt) (AHA)
Components of a Healthy Diet (WHO 2019)

- Fruit, vegetables, legumes (e.g. lentils and beans), nuts and whole grains (e.g. unprocessed maize, millet, oats, wheat and brown rice).
- At least 400 g (i.e. five portions) of fruit and vegetables per day, excluding potatoes, sweet potatoes, cassava and other starchy roots.
- Less than 10% of total energy intake from free sugars, which is equivalent to 50 g (or about 12 level teaspoons), but ideally is less than 5% of total energy intake.
- Less than 30% of total energy intake from fats. Unsaturated fats (found in fish, avocado and nuts, and in sunflower, soybean, canola and olive oils) are preferable to saturated fats (found in fatty meat, butter, palm and coconut oil, cream, cheese, ghee and lard) and \textit{trans}-fats of all kinds, including both industrially-produced \textit{trans}-fats and ruminant \textit{trans}-fats. It is suggested that the intake of saturated fats be reduced to less than 10% of total energy intake and \textit{trans}-fats to less than 1% of total energy intake.
- Less than 5 g of salt (equivalent to about one teaspoon) per day. Salt should be iodized.
Food-based dietary guidelines in Sub-Saharan Africa

Sierra Leone

South Africa

Benin

Namibia

Seychelles
Latin America and the Caribbean food-based dietary guidelines

Argentina

Mexico

Honduras

Paraguay

Peru

Colombia

They give 8 examples from across the country for breakfast while featuring culturally based constants of the dietary pattern. As noted, coffee with milk and fruit are a constant feature.
Rice and beans are a component of the daily diet of most Brasilians. Red meat is only shown in one-third of the plates, and vegetables are shown in greater amount and diversity than what is typical – this is being promoted.
Again, most dinners contain rice with beans. Red meats are only shown one-third of the time, and vegetables are promoted, also incorporation of fruits.
NOVA Classification System (Monteiro et al, 2016)

- Group 1: unprocessed/natural or minimally processed foods
- Group 2: processed with minimal amounts of fat, sugar or salt through culinary processes
- Group 3: processed foods such as vegetables in brine, cheese, bread, fruits in syrup
- Group 4: ultra-processed foods packaged and ready to serve foods, soft drinks, formulated foods

The golden rule
Always prefer natural and minimally processed foods and prefer freshly made dishes and meals to ultra-processed products
## Food based dietary guidelines: Benin

<table>
<thead>
<tr>
<th>Time</th>
<th>Menu 1</th>
<th>Menu 2</th>
</tr>
</thead>
</table>
| **Breakfast** | 2 bowls of maize porridge  
1 fermented bean paste ball, fried  
½ bottle milk  
Water | 2 bowls millet porridge  
1 cup milk based soup  
¼ bowl grilled peanuts  
Water |
| **Lunch**   | 2 bowls stiff maize porridge  
1 bowl tomato sauce with green leafy  
Fresh fish  
Orange  
Water | 2 bowls rice  
1 bowl cooked beans  
1 bowl tomato sauce  
Mango  
Water |
| **Snack**   | pineapple                                                                                       | mango                                                                                           |
| **Dinner**  | 1 bowl of stiff maize porridge  
1 bowl tomato sauce with green leafy  
Fresh fish  
Water | 1 bowl of fermented maize porridge  
1 bowl of dried fish  
1 bowl of tomato sauce + okra sticky sauce  
Papaya  
Water |
# Reference diet (EAT Lancet Commission 2019)

<table>
<thead>
<tr>
<th>Food</th>
<th>Kcal/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole grains</td>
<td>811</td>
</tr>
<tr>
<td>Starchy vegetables</td>
<td>39</td>
</tr>
<tr>
<td>Vegetables</td>
<td>450+</td>
</tr>
<tr>
<td>Fruit</td>
<td>126</td>
</tr>
<tr>
<td>Dairy</td>
<td>153</td>
</tr>
<tr>
<td>Meat/eggs</td>
<td>15-62</td>
</tr>
<tr>
<td>Legumes</td>
<td>112-172</td>
</tr>
<tr>
<td>Tree nuts</td>
<td>149</td>
</tr>
<tr>
<td>PUFA</td>
<td>354</td>
</tr>
<tr>
<td>Lard/palm</td>
<td>36-60</td>
</tr>
<tr>
<td>Added sugars</td>
<td>120</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2500</td>
</tr>
</tbody>
</table>

![Figure 1: Diet gap between dietary patterns in 2016 and reference diet intakes of food](image)

Data on 2016 intakes are from the Global Burden of Disease database. The dotted line represents intakes in reference diet (table 1).
### Meal times and structures – How do people eat?

<table>
<thead>
<tr>
<th>Meal Type</th>
<th>Time Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>5-9 am</td>
</tr>
<tr>
<td>2nd breakfast, Elevenses</td>
<td>10-11:30 am</td>
</tr>
<tr>
<td>Tiffin, Dosirak, Bento?</td>
<td>12-3 pm</td>
</tr>
<tr>
<td>Lunch/dinner?</td>
<td>11-2 pm?</td>
</tr>
<tr>
<td>Brunch?</td>
<td>5-7 pm</td>
</tr>
<tr>
<td>Tea</td>
<td>5-midnight</td>
</tr>
<tr>
<td>Dinner/supper</td>
<td>After school snack</td>
</tr>
<tr>
<td>Snack/merenda or Merienda or meryenda</td>
<td>Snack before bedtime</td>
</tr>
</tbody>
</table>
What goes with what? What should never be served with what? Is there an order? How do you build a meal?

- Meat + sides + ?
- Buddha bowl?
- Courses?
- Rice + sauce
- Couscous + Sauce
Is there a global healthy diet?

• Maybe…probably, but…
• Most of the evidence base on healthy diets is with respect to cardiometabolic disease in adults and most of the risk estimates are derived from US and European studies.
• The problem is that only selected dietary patterns contribute to the risk estimates and are then applied to all countries and regions.
• Examples where this matters: potatoes, corn, maize meal, legumes/pulses, white rice.
• Need for research on dietary patterns and chronic disease in adults in LMIC.