Tracking Access to Healthy Diets

Using recent administrative urban food price data for India

Kalyani Raghunathan*, Anita Christopher, Derek Headey, Sudha Narayanan (IFPRI)

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Rising double (triple?) burden of malnutrition in India

- As of 2020, ~306 million undernourished people were from South Asia and ~210 million were from India alone (SOFI 2021).

- Rising trends in obesity and overweight, especially in urban areas:
  - 33.2% of women and 29.8% of men in urban areas are overweight or obese, 10 pp increase in 5 years (NFHS 4 and 5).

- Increase in anemia for men, women, children – ~2/3rds of kids < 5 years & 50% women 15-49 anemic.

- India clearly in stage of nutrition transition characterized by the ‘double burden’ of malnutrition.
What kinds of policy solutions can work?

- National policy largely geared to the north and to rural areas
- Improving access to healthy and nutritious diets good policy instrument - addresses problems at both ends of the spectrum
- But can people afford to purchase these in the market? Estimates suggest that about 92% of all food consumed is purchased
- We have a data problem: existing estimates of affordability of diets are either outdated, or use small-scale primary data
Can routine administrative price data fill this gap?

- We gather urban food price data from several publicly available administrative databases.

- Combine these with the most recent India food-based dietary guidelines to assess the cost of a nutritious diet:
  - How has this changed due to COVID?
  - What food groups have seen the steepest price rises?

- Extrapolate from most recent consumption data to assess affordability:
  - How does the cost compare to average per adult equivalent food expenditures across quintiles?
  - How does expenditure across food groups compare to recommendations?
Urban food prices from multiple sources

Department of Consumer Affairs
- Daily retail
- 21 commodities
- Common foods only
- 182 urban centres

National Horticulture Board
- Daily retail
- 26 commodities:
  - fruits & vegetables
  - 31 urban centres

Dept. of Economics & Statistics – Ministry of Agriculture
- Weekly retail prices
- 45 commodities
  - Wide range of foods
  - 77 urban centres

Ministry of Agriculture
- Daily farmgate prices
- 312 commodities (not all foods)
- 567 districts

- Aggregated into weekly district-level dataset: January 2018 to April-May 2022
- Prices manually checked for outliers that could be errors in data entry, also winsorized within centre and commodity combinations
- Deflated using state-month level general urban CPI
Calculating the cost of a healthy diet: Using India’s FBDG and food composition tables

- NIN came out with new “My Plate” guidelines in 2018
- We used the total kcal/day recommendations, combined with the 2015 India Food Composition Tables to estimate daily serving sizes for each commodity
- Unlike earlier guidelines, no variation across sex or by levels of physical activity

<table>
<thead>
<tr>
<th>Food groups</th>
<th>Foods to be Consumed (g)/day</th>
<th>Percent of Total E (kcal)/day</th>
<th>Total E (kcal)/day</th>
<th>Total protein (g)/ day</th>
<th>Total fat (g)/ day</th>
<th>Carbohydrate (g)/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals (incl. Nutricereals)</td>
<td>240</td>
<td>40</td>
<td>800</td>
<td>18</td>
<td>4</td>
<td>162</td>
</tr>
<tr>
<td>Pulses*</td>
<td>90</td>
<td>17</td>
<td>340</td>
<td>21</td>
<td>3</td>
<td>41</td>
</tr>
<tr>
<td>Milk/ Curd (ml)</td>
<td>300</td>
<td>10</td>
<td>200</td>
<td>10</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Vegetables+ green leafy vegetable (GLV)</td>
<td>350</td>
<td>5</td>
<td>100</td>
<td>4</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Fruits#</td>
<td>150</td>
<td>5</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Nuts &amp; Seeds</td>
<td>30</td>
<td>11</td>
<td>217</td>
<td>6</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Fats &amp; Oils$</td>
<td>27</td>
<td>12</td>
<td>243</td>
<td>-</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1187</strong></td>
<td><strong>100</strong></td>
<td><strong>2000</strong></td>
<td><strong>60</strong></td>
<td><strong>60</strong></td>
<td><strong>264</strong></td>
</tr>
</tbody>
</table>

* Eggs/fish/meat can substitute pulses
* Prescribed amount of vegetables (excluding potato) may be consumed either in cooked form/salad
* Prefer fresh fruits (avoid juices)
* Use different varieties of cooking oils, vegetables, fruits, nuts etc., to obtain a variety of phytonutrients, vitamins, minerals and bioactive compounds.
## Number of commodities, prices by food group

<table>
<thead>
<tr>
<th>Food group</th>
<th>#items</th>
<th>#obs in 2018</th>
<th>2018 Retail price (defl INR/kg)</th>
<th>#obs in 2021</th>
<th>2021 Retail price (defl INR/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>mean (sd) [min-max]</td>
<td></td>
<td>mean (sd) [min-max]</td>
</tr>
<tr>
<td>Cereals</td>
<td>9</td>
<td>32,462</td>
<td>29.68 (10.31) [8.53, 120]</td>
<td>40,866</td>
<td>28.17 (9.12) [11.88, 78.94]</td>
</tr>
<tr>
<td>Pulses</td>
<td>6</td>
<td>34,496</td>
<td>69.95 (12.65) [36.1, 144]</td>
<td>46,554</td>
<td>79.02 (14.06) [44.15, 168.85]</td>
</tr>
<tr>
<td>Eggs, flesh foods</td>
<td>4</td>
<td>11,781</td>
<td>247.47 (165.38) [9.17, 1500]</td>
<td>12,625</td>
<td>260.57 (177.62) [74.16, 1019.05]</td>
</tr>
<tr>
<td>Dairy</td>
<td>1</td>
<td>6,327</td>
<td>42.42 (6.25) [27.26, 70.1]</td>
<td>8,567</td>
<td>40.78 (5.82) [23.57, 68.95]</td>
</tr>
<tr>
<td>Fruits</td>
<td>14</td>
<td>16,580</td>
<td>67.95 (43.19) [9.49, 327.92]</td>
<td>12,852</td>
<td>68.13 (46.1) [8.41, 253.24]</td>
</tr>
<tr>
<td>Vegetables</td>
<td>9</td>
<td>28,398</td>
<td>24.79 (12.94) [4.81, 164.75]</td>
<td>33,322</td>
<td>25.84 (13.23) [3.24, 172.35]</td>
</tr>
<tr>
<td>DGLV*</td>
<td>6</td>
<td>7,554</td>
<td>13.9 (9.84) [0.06, 99.33]</td>
<td>7,039</td>
<td>14.27 (9.59) [0.05, 83.97]</td>
</tr>
<tr>
<td>Edible oils</td>
<td>9</td>
<td>33,977</td>
<td>176.35 (147.69) [34.07, 2272.09]</td>
<td>44,645</td>
<td>181.64 (108.05) [54, 2007.64]</td>
</tr>
<tr>
<td>Nuts &amp; seeds*</td>
<td>4</td>
<td>5,419</td>
<td>105.5 (209.9) [17.13, 1078.42]</td>
<td>4,351</td>
<td>85.15 (161.82) [16.6, 860.26]</td>
</tr>
</tbody>
</table>

*: Farmgate prices from mandi data
Food prices rose steeply during COVID

- We use the urban retail prices to construct a weighted price index
- The “base basket” here contains 31 commonly consumed foods: cereals, pulses, vegetables, fruits and oils
- On unpacking: sharp increases in price of vegetables (esp. initially), pulses (over a longer period), animal-sourced foods
Large uncoordinated seasonal swings in prices

- Pulses
- Fruits
- Vegetables
- Eggs and flesh foods
- DGLV
- Nuts & seeds
Fruits and dairy are the largest contributors to the cost of a healthy diet

Average per day cost by food groups is estimated by unweighted average of commodity cost per item for two lowest cost foods (identified by food groups: 2 each for cereals, proteins, fruits and veg, 1 for all others)
What can we say about diet affordability?

- Used the NSS 2011-12 data to calculate expenditure on food for each wealth quintile, separately for rural and urban
  - Wealth quintiles calculated using total expenditure, including on non-food items
  - Food expenditure includes processed foods, snacks, beverages, meals outside the home

- Used state-wise estimates of the adult equivalent conversion factors to calculate per adult equivalent expenditure

- Inflate rural expenditures by state-commodity specific rural-urban markups, since we will compare these to an urban price-based cost of healthy diet
Cost of healthy diet versus per adult equivalent expenditures

All but the lowest urban quintile spend more than the CoRD. Policy recommendations: information!

Top three rural wealth quintiles spend more than the CoRD. Policy recommendations: raise awareness, but also, raise incomes, lower cost of nutritious foods.
Food group-wise comparisons of CoHD and projected expenditure

Note 1: Average per day cost by food groups is estimated by unweighted average of commodity cost per item for lowest cost foods (2 each for cereals, proteins, fruits and veg, 1 for all others).

Note 2: NSS proteins is a sum of pulses and flesh foods and eggs
Is the healthy diet a useful metric?

[Line graph showing the cost of healthy diet compared to Urban CPI-food and Rural CPI-food over the years 2018 to 2022.]

Rural CPI-food

Urban CPI-food

Cost of healthy diet
Conclusions

- In the absence of rich individual consumption and expenditure data, we need to find other sources.
- Routinely collected administrative information can work to plug these gaps, despite data coverage limitations.
- We can use this to calculate the cost of a healthy diet, but also to track food price indices over time at a much higher frequency (weekly if not daily).
- Can the food price index and the cost of a healthy diet be metrics that administrative agencies take on as part of routine statistics?
  - CoHD contains important additional information over and above CPI-food.